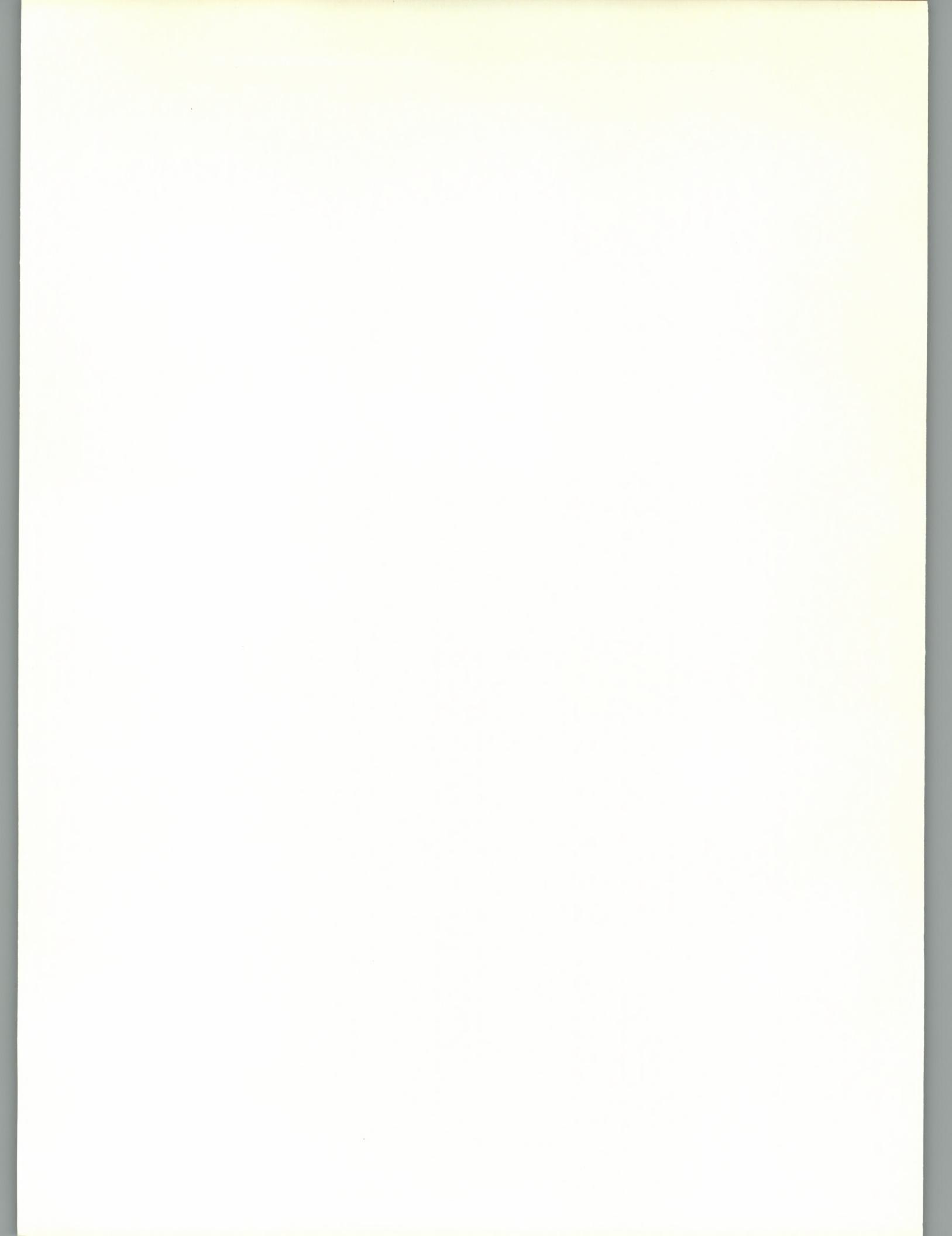

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OpenVMS Exchange Utility Manual



OpenVMS



OpenVMS Exchange Utility Manual

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This document describes the functions of the Exchange Utility for use on VAX processors.

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Preface

Intended Audience

This document is intended for users who transfer data between VMS volumes and foreign volumes.

Document Structure

This document is composed of the following three sections:

- Description—Provides a full description of the Exchange Utility (EXCHANGE). This section shows the DCL command that invokes EXCHANGE, describes how to direct output from EXCHANGE, and details any applicable restrictions on EXCHANGE use.
- Usage Summary—Outlines the following EXCHANGE information:
 - Invoking the utility
 - Using the utility interactively and from the DCL command line
 - Exiting the utility
 - Directing output
 - Restrictions or privileges required
- Commands—Describes EXCHANGE commands, including format, parameters, qualifiers, and examples.

Associated Documents

The *OpenVMS System Manager's Manual* provides task-oriented instructions for performing EXCHANGE operations on private volumes.

The *OpenVMS System Manager's Manual* includes system management tasks that use the Exchange Utility.

The *VAXcluster Systems for OpenVMS* includes examples that show the use of EXCHANGE in a VAXcluster environment.

The *OpenVMS System Messages and Recovery Procedures Reference Manual* explains error messages and, in most cases, suggests recovery procedures.

Conventions

In this manual, every use of VMS means both the OpenVMS AXP and the OpenVMS VAX operating system.

The following conventions are used in this manual:

Ctrl/x	A sequence such as Ctrl/x indicates that you must hold down the key labeled Ctrl while you press another key or a pointing device button.
PF1 x	A sequence such as PF1 x indicates that you must first press and release the key labeled PF1, then press and release another key or a pointing device button.
Return	In examples, a key name enclosed in a box indicates that you press a key on the keyboard. (In text, a key name is not enclosed in a box.)
...	A horizontal ellipsis in examples indicates one of the following possibilities: <ul style="list-style-type: none"> • Additional optional arguments in a statement have been omitted. • The preceding item or items can be repeated one or more times. • Additional parameters, values, or other information can be entered.
	A vertical ellipsis indicates the omission of items from a code example or command format; the items are omitted because they are not important to the topic being discussed.
()	In format descriptions, parentheses indicate that, if you choose more than one option, you must enclose the choices in parentheses.
[]	In format descriptions, brackets indicate optional elements. You can choose one, none, or all of the options. (Brackets are not optional, however, in the syntax of a directory name in a VMS file specification, or in the syntax of a substring specification in an assignment statement.)
{ }	In format descriptions, braces surround a required choice of options; you must choose one of the options listed.
boldface text	Boldface text represents the introduction of a new term or the name of an argument, an attribute, or a reason.
	Boldface text is also used to show user input in online versions of the manual.
<i>italic text</i>	<i>Italic</i> text emphasizes important information, indicates variables, and indicates complete titles of manuals. <i>Italic</i> text also represents information that can vary in system messages (for example, <i>Internal error number</i>), command lines (for example, <i>/PRODUCER=name</i>), and command parameters in text.
UPPERCASE TEXT	Uppercase text indicates a command, the name of a routine, the name of a file, or the abbreviation for a system privilege.
-	A hyphen in code examples indicates that additional arguments to the request are provided on the line that follows.
numbers	All numbers in text are assumed to be decimal, unless otherwise noted. Nondecimal radices—binary, octal, or hexadecimal—are explicitly indicated.
quotation marks apostrophes	The term quotation marks is used to refer to double quotation marks ("). The term apostrophe (') is used to refer to a single quotation mark.

EXCHANGE Description

The Exchange utility (EXCHANGE) enables you to transfer files between some foreign format volumes and VMS native volumes. It converts the format of the files when transferring files between volumes of different structures. EXCHANGE recognizes all Files-11 volumes on VMS devices, as well as DOS-11 magnetic tape volumes and RT-11 block-addressable volumes.

You can use EXCHANGE commands to perform the following tasks:

- Locate bad blocks on volumes
- List directories of volumes
- Transfer files to and from volumes
- Delete and rename files for block-addressable devices, such as RT-11 disks
- Create foreign volumes
- Manipulate virtual devices, Files-11 files that are images of foreign volumes

EXCHANGE employs defaults to ensure that the volume formats and file structures are compatible with the type of operation you want to perform. However, you can override these defaults by using volume format and record format qualifiers.

The following sections describe EXCHANGE media, commands, qualifiers, and defaults.

1 The EXCHANGE Media

Use EXCHANGE to perform file transfers and format conversions on the following devices:

- RT-11 block-addressable volumes
- Files-11 volumes
- DOS-11 magnetic tape volumes

EXCHANGE recognizes RT-11 volumes on any VMS block-addressable device. However, RT-11 supports only some of the devices that are recognized by EXCHANGE. Also, RT-11 imposes a size limit of 65,535 blocks for a volume. If an RT-11 volume is created on a device that exceeds this limit, the size of the RT-11 volume is set to the maximum. Therefore, blocks 65,536 to the end of the volume cannot be used.

You can use EXCHANGE to manipulate Files-11 files that are images of foreign volumes; these files are called **virtual devices**. A virtual device volume is contained in a VMS Record Management Services (VMS RMS) file on a VMS disk. EXCHANGE contains commands to copy a block-addressable volume both to and from the RMS virtual device file. The virtual device file can then be manipulated as if it were a block-addressable device.

Files-11 Structure Level 1 or Structure Level 2 volumes are the default for disk volumes initialized by the DCL command INITIALIZE. DOS-11 and RT-11 volumes are initialized using the EXCHANGE command INITIALIZE. Since the formats of these volumes are not recognized by VMS, the volumes must be mounted as foreign volumes. To mount a foreign volume, use the DCL command MOUNT with the /FOREIGN or /NOLABEL qualifier. Refer to the *OpenVMS*

EXCHANGE Description

System Management Utilities Reference Manual for more information on the Mount utility; refer to the *OpenVMS DCL Dictionary* for more information on the DCL command INITIALIZE.

2 The EXCHANGE Command String

Most EXCHANGE command strings are similar to DCL commands for native volumes. The format for the EXCHANGE command string is as follows:

```
$ EXCHANGE command file-spec[, . . . ] [file-spec]  
EXCHANGE> command file-spec[, . . . ] [file-spec]
```

You can enter only one EXCHANGE command at the DCL prompt. Use the second file-spec parameter only for EXCHANGE commands specifying data transfers or requiring additional parameters.

The command indicates the action you want EXCHANGE to perform. Each EXCHANGE command qualifier is the same as the DCL command qualifier that performs a similar function on native volumes. If no corresponding DCL command qualifier exists, the EXCHANGE command qualifier is taken from the command on the foreign operating system. Table EXCH-1 lists the EXCHANGE commands and their functions.

Table EXCH-1 EXCHANGE Commands

Command	Function
COPY	Copy files from input to output spec
DELETE	Delete files from block-addressable volumes
DIRECTORY	List names of files on volume
DISMOUNT	Dismount a volume
EXIT	Return to the DCL command level
HELP	Display help on EXCHANGE commands and features
INITIALIZE	Erase contents, if any, and create an empty volume
MOUNT	Mount a volume on a device (foreign only)
RENAME	Rename files on block-addressable volumes
SHOW	Show volumes known to EXCHANGE
TYPE	Display files on the default output device

3 The /MESSAGE Qualifier

Use the EXCHANGE command line qualifier /[NO]MESSAGE to control whether or not EXCHANGE displays messages related to the MOUNT, DISMOUNT, and INITIALIZE commands. The default is /MESSAGE, which remains in effect throughout the EXCHANGE session unless you explicitly change it. You can change the default by specifying /NOMESSAGE, as follows:

```
$ EXCHANGE/NOMESSAGE  
EXCHANGE>
```

4 Volume Format Specification

EXCHANGE allows you to define the physical format of the volumes to be processed. Specify the volume format by using the qualifier **/VOLUME_FORMAT=option**. If you do not define a volume format, EXCHANGE uses defaults.

The qualifier **/VOLUME_FORMAT=option** determines which operations are allowed on the volume, and the option you specify often implies certain defaults. In addition, the volume format qualifier determines the format of the file name and directory specifications.

The **/VOLUME_FORMAT** qualifier has three options. **FILES11** identifies a Files-11 formatted native volume. **RT11** identifies an RT-11 formatted block-addressable volume. **DOS11** identifies a DOS-11 formatted magnetic tape volume.

To use the volume format qualifiers, you must attach them to one or both of the file specification parameters; you cannot attach them directly to the command.

You can specify multiple volumes of different volume types, as in the following example:

```
EXCHANGE> COPY DMA1:*.FOR/VOLUME=RT11,MTA0:[11,132]*.FOR/VOLUME=DOS11 *
```

The following sections describe volume format options and explain EXCHANGE device and file specifications.

4.1 Files-11 Volume Format

Files-11 is the disk volume format maintained by the VMS operating system. Although the VMS operating system fully supports the volume formats of ANSI magnetic tape and Files-11 Structure Levels 1 and 2, EXCHANGE uses VMS Record Management Services (VMS RMS) for operations on these file structures.

To specify a Files-11 volume, or a file on a Files-11 volume, use a standard VMS file specification. For a description of VMS file specifications, refer to the *OpenVMS DCL Dictionary*. The following two sections provide additional information on the use of EXCHANGE with Files-11 volumes and files.

4.1.1 Files-11 Device Specifications

Use the **FILES11** option when referencing any VMS device, even though the Files-11 structure specifically refers to directory-structured devices such as disks, diskettes, and TU58 tape cassettes. This usage is consistent with VMS RMS, which allows unit-record devices (such as terminals) and magnetic tapes to be accessed in a device-independent manner.

Files-11 is the standard disk format for the VMS operating system. You only need to specify the **/FOREIGN** qualifier when mounting volumes that have a format other than Files-11.

If you specify **FILES11** when referencing a magnetic tape device, an ANSI-formatted magnetic tape device is implied. The tape must have been mounted as an ANSI volume. For more information on mounting tape devices, refer to the *OpenVMS System Management Utilities Reference Manual*.

EXCHANGE Description

4.1.2 Files-11 File Specifications

There are no restrictions on the use of logical names in Files-11 file specifications. If you omit device or directory specifications from a Files-11 specification, EXCHANGE uses the current defaults for your process.

You can use wildcard characters for both input and output file specifications. You should not, however, specify version numbers as wildcards on foreign volumes that do not support version numbers (such as RT-11 or DOS-11 volumes). If you use wildcards in any field of the output file specification, EXCHANGE takes the corresponding name from the input file.

4.2 RT-11 Volume Format

The RT11 option allows you to read and write block-addressable volumes in the format used by Digital's RT-11 operating system. EXCHANGE permits you to use devices other than those supported by RT-11.

The following two sections describe how you can use EXCHANGE to specify RT-11 volumes and files.

4.2.1 RT-11 Device Specifications

The device name you specify for the RT-11 volume can be either a standard VMS device name in the form **ddcu:** or a logical name that translates to a VMS device name. This device must have been mounted with the /FOREIGN qualifier.

4.2.2 RT-11 File Specifications

You can specify an RT-11 file name that consists of any uppercase letters from A through Z and any digits from 0 through 9 (RADIX-50 characters). The file name field for RT-11 is six characters; the file type field is three characters. The RT-11 file specification has no directory field because RT-11 volumes do not have user directories.

If you copy a file with a name that is not valid under RT-11 to an RT-11 volume, the RT-11 file name is produced from the first six valid characters of the name. The RT-11 file type is extracted from the first three valid characters of the input file type (for input names that are similar to Files-11 names). Lowercase letters are converted to uppercase before EXCHANGE checks for a valid file name. For example:

```
EXCHANGE> COPY/LOG  SYS_CREATE_PROCESS.MACRO_32  DMA0:/VOLUME=RT11
%EXCHANGE-S-COPNEWNAME, DEV$:[SYS.SRC]SYS_CREATE_PROCESS,MACRO_32;34
copied to DMA0:SYSCRE.MAC, 937 records

EXCHANGE> COPY/LOG  MTA0:"ANSI (A) TAPENAME"  DMA0:/VOLUME=RT11
%EXCHANGE-S-COPNEWNAME, MTA0:[ ]"ANSI (A) TAPENAME";1
copied to DMA0:ANSIAT., 321 records
```

EXCHANGE allows you to rename a file on a copy operation, so you can specify any valid file name for the output file.

4.3 DOS-11 Volume Format

Use the DOS11 option with the /VOLUME_FORMAT qualifier to specify that a magnetic tape is in the format defined by Digital's early PDP-11 Disk Operating System, DOS-11.

The following two sections describe how you can specify DOS-11 devices and files using EXCHANGE.

4.3.1 DOS-11 Device Specifications

You can use the DOS-11 format only on magnetic tape devices. Therefore, a VMS device specification for a 9-track magnetic tape drive must be present in order for you to use the DOS11 option.

4.3.2 DOS-11 File Specifications

DOS-11 volumes accept directories only in the user identification code (UIC) format, such as [310,22]. The two numbers are octal and must be in the range 0 through 377. When you specify the directory in an input file specification, you can use a wildcard character to indicate either number.

The EXCHANGE command DIRECTORY/OWNER uses a default directory of [*,*], so that all the files on the tape are listed regardless of the DOS-11 directory. For all other commands, EXCHANGE uses your current default directory, as long as it is in UIC format. Otherwise, your process UIC becomes a directory. If a file that appears in an EXCHANGE command DIRECTORY is not found by another EXCHANGE command, enter the DIRECTORY/OWNER command for that file. Then enter the other EXCHANGE command again, specifying the same directory displayed for the file by the DIRECTORY/OWNER command.

The DOS-11 character set for file names is the same as the character set for RT-11: the uppercase letters from A through Z and the digits 0 through 9. The DOS-11 file name field is nine characters long; the file type field is three characters.

If you copy a file with a name that is invalid under DOS-11 to a DOS-11 magnetic tape, the file name on the magnetic tape is formed from the first nine valid characters of the input file name. The DOS-11 file type is extracted from the first three valid characters of the input file type (for input names that are similar to Files-11 names). Lowercase letters are converted to uppercase before EXCHANGE checks for a valid file name. For example:

```
EXCHANGE> COPY/LOG SYS_CREATE_PROCESS.MACRO_32 MFA0:/VOLUME=DOS11
  %EXCHANGE-S-COPNEWNAME, DEVDS:[SYS.SRC]SYS_CREATE_PROCESS.MACRO_32;34
  copied to MFA0:SYSCREATE.MAC, 937 records

EXCHANGE> COPY/LOG MTA0:"ANSI (A) TAPENAME" MFA0:/VOLUME=DOS11
  %EXCHANGE-S-COPNEWNAME, MTA0:[ ]"ANSI (A) TAPENAME";1
  copied to MFA0:ANSIATAPE., 321 records
```

4.3.3 DOS-11 Performance Optimization

When you specify the COPY or TYPE command with the /REWIND qualifier, a DOS-11 tape device does not rewind to the beginning of tape. DOS-11 maintains an in-memory list of the files it has read on the tape. The /REWIND qualifier directs DOS-11 to read the list of files from memory and to rewind only to the beginning of the file specified in the COPY or TYPE command. This is called a logical rewind operation.

4.4 Volume Format Defaults

EXCHANGE uses the following default volume formats if you do not specify the /VOLUME_FORMAT qualifier:

- If a volume is mounted as a native volume (without the /FOREIGN or /NOLABEL qualifier), the default is /VOLUME_FORMAT=FILES11. This default applies to both block-addressable and magnetic tape devices.

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- If the volume is block-addressable (disks, diskettes, and TU58 tape cassettes) and mounted with the /FOREIGN qualifier, EXCHANGE defaults to /VOLUME_FORMAT=RT11.
- If the volume is a 9-track magnetic tape mounted with the /FOREIGN qualifier, the default is /VOLUME_FORMAT=DOS11.
- If no device is given, EXCHANGE defaults to the current default device. For example:

```
$ MOUNT/FOREIGN DMA0:  
$ SET DEFAULT DMA0:
```

Since the DCL command SET DEFAULT assigns the RK07 disk named DMA0 as the default device, any subsequent EXCHANGE command defaults to DMA0 for a file reference that omits a device specification. EXCHANGE assigns DMA0 the default format option RT11 because the volume is mounted with the /FOREIGN qualifier.

5 Record Format and Attribute Specification

EXCHANGE allows you to specify the internal record structure and related attributes of a file. Define the record structure of a file by using the qualifier /RECORD_FORMAT=option. In addition to the record structure options, the /RECORD_FORMAT qualifier includes options you can use to define other related attributes of the records. The qualifier /CARRIAGE_CONTROL=option allows you to define the carriage control attributes.

The following sections describe how you can use the /RECORD_FORMAT and /CARRIAGE_CONTROL qualifiers.

5.1 Record Format and Attribute Options

When you specify an input file, you can use the /RECORD_FORMAT qualifier to give EXCHANGE additional information to use in reading the file. You need to specify this information when a foreign file structure is not entirely self-descriptive, or when a special interpretation of the file structure is needed.

To define the internal record structure of a file, the /RECORD_FORMAT qualifier has four options: BINARY, FIXED, STREAM, and VARIABLE. In addition, there are two options to define related file attributes: FIXED=n and PAD=x. Table EXCH-2 summarizes the record format and attribute options.

Table EXCH-2 Record Format and Attribute Options

Option	Function
BINARY	Identifies PDP-11 formatted binary record format
FIXED	Identifies fixed-length record format; sets fixed-length record size
STREAM	Identifies ASCII stream record format
VARIABLE	Identifies variable-length record format
PAD	Sets the character to pad short records on fixed-length output, valid only with the FIXED option

You can specify only one of the four record format options at a time. The FIXED=n and PAD=n file attribute options are valid only with the record format FIXED.

You are not required to include input record format qualifiers on Files-11 input, since Files-11 stores file attributes that allow EXCHANGE to read the file correctly. If a Files-11 file is not in a suitable format, you can use the Convert utility (CONVERT) to change the file to the desired format. For a detailed description of CONVERT, refer to the *OpenVMS Record Management Utilities Reference Manual*.

When you specify an output file, use the /RECORD_FORMAT qualifier to specify the characteristics the file should have after it is copied. Specific options are available with the /RECORD_FORMAT and /CARRIAGE_CONTROL qualifiers to provide commonly needed attributes.

The following sections describe the record format and attribute options.

5.1.1 BINARY Option

The BINARY record format is valid with DOS-11 or RT-11 volumes. BINARY files (also known as formatted binary) have variable-length records with headers and checksums added to each record.

The BINARY option is not valid for Files-11 output. On conversions from DOS-11 or RT-11 BINARY input to Files-11 output, EXCHANGE normally generates variable-length records. The output record size equals the input record size.

5.1.2 FIXED Option

The FIXED option directs EXCHANGE to read or write fixed-length records only. The file contains no control information; since the records are all the same length, they are easily located.

You can use the FIXED option to indicate the desired number of bytes in the record. If you do not specify an explicit record length, EXCHANGE assumes a record length of 512 bytes.

If any input records are longer than the specified length, EXCHANGE truncates them. If input records are shorter than the output record, EXCHANGE extends them with the PAD character. The default PAD character is the null character. To specify an alternate PAD character, use the PAD option.

As an input option, FIXED is valid only for non-Files-11 FIXED transfers. It is not a valid option for STREAM, VARIABLE, or BINARY transfers because these operations determine the record length by delimiters or control bytes.

5.1.3 STREAM Option

Stream ASCII files, also known as formatted ASCII files, consist of ASCII data records terminated by carriage return/line feed (CR-LF), form feed (FF), or vertical tab (VT) characters.

In transfers from DOS-11 or RT-11 STREAM files to Files-11 VARIABLE files, CR-LF pairs are removed from the ends of records. In transfers from Files-11 VARIABLE files to DOS-11 or RT-11 STREAM files, CR-LF pairs are added to the end of each record that does not already end with LF or FF. EXCHANGE removes all null (NUL), delete (DEL), and vertical tab (VT) characters from input records in any of these transfers. ASCII data is transferred as 7-bit codes. Bit 7 (sometimes used as a parity bit) of each byte is set to 0 before the transfer.

If the RT-11 or DOS-11 file is input or output as an ASCII text file with fixed-length records, use the FIXED option rather than the STREAM option. An ASCII stream file with records of the same length is not the same as a file of fixed-length records. STREAM files have records delimited by control characters. FIXED files have no delimiters; EXCHANGE locates FIXED file records by counting bytes.

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When you perform conversions from DOS-11 or RT-11 to Files-11, EXCHANGE normally generates variable-length records (/RECORD_FORMAT=VARIABLE). The output record size equals the input record size.

5.1.4 VARIABLE Option

The variable-length record format is the most common type of Files-11 format. The file uses internal control information to separate the records, so that any sequence of bytes (even CR-LF) can be contained in the data. By default, EXCHANGE generates Files-11 files with VARIABLE records unless the input file is FIXED.

You cannot specify VARIABLE for RT-11 and DOS-11 output.

5.1.5 PAD Option

Use the PAD option to specify which character will be used to pad input records that are shorter than the fixed-length output record. By default, EXCHANGE pads with the NULL character (value 0). Table EXCH-3 shows which characters you can specify with the PAD option.

Table EXCH-3 Pad Characters

Option	Character
PAD	NULL (0 Decimal)
PAD=c	Where c is ASCII A through Z (uppercase), or 0 through 9
PAD="c"	Where c is any other ASCII character
PAD=%bx	Where x is a number representing an ASCII character and b represents the base of the number. Values for b: D = decimal O = octal X = hexadecimal

5.2 Record Format Defaults

EXCHANGE assumes defaults for the record formats if you do not specify an explicit /RECORD_FORMAT option. The defaults are dependent on a number of factors and allow you to perform most transfer operations without using the /RECORD_FORMAT qualifier.

Files-11 input files use a default /RECORD_FORMAT option of FIXED, STREAM, or VARIABLE, depending on the actual record format of the file. If a Files-11 file is not in a suitable format, you can use the Convert utility (CONVERT) to change the file format. For a detailed description of CONVERT, refer to the *OpenVMS Record Management Utilities Reference Manual*.

By default, EXCHANGE generates Files-11 output files with sequential organization. However, if the input file is in BINARY, STREAM, or VARIABLE format, the default Files-11 output record format is VARIABLE. If the input file has FIXED format, the default output format is FIXED.

For DOS-11 and RT-11, EXCHANGE assumes default record formats for a file based on the type field of the file name. If the file type is OBJ, STB, BIN, or LDA, the default record format is BINARY. If the file type is EXE, %LB (%) is a wildcard character representing a single character), SAV, SML, SYS or TSK, the default record format is FIXED=512. For all other types of input files, the default record format is STREAM. The default for other types of output files depends on the record format of the input file.

EXCHANGE applies these defaults only for transfers between an RT-11 or DOS-11 volume and a Files-11 volume. When you perform a transfer between an RT-11 or DOS-11 volume and another RT-11 or DOS-11 volume, the file is copied block by block; no reformatting occurs unless you request a conversion with an explicit /RECORD_FORMAT option.

In most cases, EXCHANGE applies a record format default to the input file and lets the resulting input record format imply the output record format. However, if any of the file types previously listed is included in an output specification, the default implied by the input record format is overridden.

Table EXCH-4 shows how the output record formats are implied by different input record and volume formats. The input format can be defaulted, read from the file (for Files-11), implied by the type field of the input file, or explicitly stated. Note that the default output formats are overridden by record formats implied by the type field of the output files.

Table EXCH-4 Implied Output Record Formats

Input Volume	Input Record	Output Volume	Output Record
Files-11	Fixed	Files-11	Fixed
Files-11	Stream	Files-11	Variable
Files-11	Variable	Files-11	Variable
Files-11	Fixed	RT-11,DOS-11	Fixed
Files-11	Stream	RT-11,DOS-11	Stream
Files-11	Variable	RT-11,DOS-11	Stream
Files-11	Variable	RT-11,DOS-11	Binary
RT-11,DOS-11	Binary	Files-11	Variable
RT-11,DOS-11	Fixed	Files-11	Fixed
RT-11,DOS-11	Stream	Files-11	Variable

5.3 Carriage Control Options

For Files-11 files only, you can specify a file's carriage control attributes by using the qualifier /CARRIAGE_CONTROL=option. This qualifier has the following options: CARRIAGE_RETURN, FORTRAN, and NONE.

The default option is CARRIAGE_RETURN. The CARRIAGE_RETURN option indicates that each record is to be preceded by a line feed and followed by a carriage return when the record is written to a carriage control device (such as a line printer or terminal).

The FORTRAN option indicates that the first character of each record is to be interpreted as the carriage control specifier. This option does not alter any of the actual data. The FORTRAN option is valid only with Files-11 output files and is incompatible with stream output to Files-11.

The NONE option indicates that carriage control is not implied for the file. If you specify NONE, EXCHANGE assumes that each record contains the control characters necessary for proper formatting.

EXCHANGE Description

6 Virtual Devices

A **virtual device** is an RMS file that contains an image of a foreign block-addressable device. EXCHANGE treats a virtual device as if it were a foreign volume.

You must use EXCHANGE interactively if you want to manipulate a virtual device. In other words, you cannot operate on a virtual device by entering the EXCHANGE commands at DCL level, because a virtual device must be mounted before it can be accessed. EXCHANGE executes only a single command in DCL mode, and it is not possible to both mount and operate on the virtual device in a single command.

To create a virtual device, use the command INITIALIZE/CREATE, as follows:

```
EXCHANGE> INITIALIZE/CREATE DRA1:[TEST]MYPHILE
%EXCHANGE-S-INITIALIZED, the RT-11 volume DRA1:[TEST]MYPHILE.DSK
has been initialized
```

This command creates a virtual device in the directory [TEST] on DRA1. EXCHANGE applies the default file type DSK.

When you use the EXCHANGE command MOUNT/VIRTUAL, include two parameters (as opposed to one parameter for MOUNT/FOREIGN). The first parameter supplies the name of the virtual device; the second parameter is the name of the RMS file containing the device image. Thereafter, EXCHANGE uses the virtual device name as a logical name to determine the physical location of the virtual device. For example:

```
EXCHANGE> INITIALIZE/CREATE DRA2:[DISKS]VIRTUAL
%EXCHANGE-S-INITIALIZED, the RT-11 volume DRA2:[DISKS]VIRTUAL.DSK
has been initialized
```

```
EXCHANGE> MOUNT/VIRTUAL DISK: VIRTUAL.DSK
%EXCHANGE-S-MOUNTVIR, the RT-11 virtual volume DISK: has been mounted
      using the file DRA2:[DISKS]VIRTUAL.DSK;1
```

```
EXCHANGE> DIRECTORY DISK:
```

```
Directory DISK: 16-MAR-1985 08:30
      using DRA2:[DISKS]VIRTUAL.DSK;1
```

ANSI.COM	1	16-Mar-1985	QARINV.TXT	3	16-Mar-1985
REASSI.COM	13	16-Mar-1985	SYSCRE.MAC	1	16-Mar-1985

```
Total of 4 files, 18 blocks. Free space 4944 blocks, largest 4474.
```

```
EXCHANGE> COPY /LOG SYS$LOGIN:WORKLIST.TXT DISK:
%EXCHANGE-S-COPIED, WRKD$:[JOYNER.LOGIN]WORKLIST.TXT;10 copied to
      DISK:WORKLI.TXT, 73 records
```

```
EXCHANGE> DISMOUNT DISK:
```

```
%EXCHANGE-S-DISMOUNTED, the RT-11 volume DISK: has been dismounted
```

The name "DISK:" is used in the same manner as a device name. Therefore, when naming a virtual device, do not use a name that you have already defined as a logical name. EXCHANGE reads logical name translations first and will ignore a duplicate virtual device name, making that device inaccessible.

EXCHANGE Usage Summary

The Exchange utility (EXCHANGE) allows you to manipulate mass storage volumes written in formats other than those normally recognized by VMS.

Format

```
EXCHANGE command [file-spec] [file-spec]  
EXCHANGE> command [file-spec] [file-spec]
```

Parameters

command

Defines the specific operation to be performed.

file-spec

Specifies the device name, directory, and file name for the EXCHANGE input or output device. It has the following general form:

device:[directory]filename.filtype;version

device:	The device name can be either a standard VMS device name of the form ddcu; or a logical name that translates to a VMS device name. If the device field is omitted for a reference, the current default device is assumed. When a virtual device is mounted, a name is created for the virtual device and is used as the device name in subsequent EXCHANGE commands.
[directory]	The syntax of the directory subfield is volume specific.
filename	The name field file specification for an input or output file. The exact format allowed for the filename is dependent on the volume format qualifier used.
filtype	The extension field of the file specification.
version	The version number of the file, if supported by the volume type.

Usage Summary

You can use EXCHANGE in two ways. You can work interactively (within the utility) by entering "EXCHANGE" at the DCL prompt. This invokes the utility, which responds with the EXCHANGE> prompt. You can then enter any EXCHANGE command. You must invoke the utility and use it interactively if you want to execute more than one EXCHANGE command. However, you can enter a single EXCHANGE command at DCL level. For example, the following command entered at DCL level lists the directory of a foreign volume:

```
$ EXCHANGE DIRECTORY DMA1:/VOLUME_FORMAT=RT11
```

When you use EXCHANGE at the DCL level, the utility returns you to the DCL prompt after it completes its task. If you are using EXCHANGE interactively, you can return to DCL at any time by typing EXIT or CTRL/Z.

EXCHANGE Usage Summary

You can direct output from EXCHANGE operations in several ways. The command qualifier /[NO]MESSAGE allows you to control the default display of information from EXCHANGE MOUNT, INITIALIZE, and DISMOUNT operations. When you use the EXCHANGE commands COPY, DELETE, RENAME, or TYPE, include the /LOG qualifier to send information about the files being processed to SYS\$OUTPUT. When you use the EXCHANGE command DIRECTORY, use the /OUTPUT[=file-spec] qualifier to direct the output to a specified file. If you specify the /OUTPUT qualifier without a file specification, the output is directed to SYS\$OUTPUT. To send the output to a printer, use the /PRINTER qualifier with the DIRECTORY command.

EXCHANGE Commands

The syntax of each of the EXCHANGE commands is similar to that of the corresponding DCL command. This section describes the functions and provides examples of the EXCHANGE commands.

COPY
DELETE
DIRECTORY
DISMOUNT
EXIT
HELP
INITIALIZE
MOUNT
RENAME
SHOW
TYPE

EXCHANGE **COPY**

COPY

Transfers a file or files from an input volume to an output volume. You can use the COPY command to do any of the following:

- Copy a file from a foreign volume to a native volume
- Copy a file from a native volume to a foreign volume
- Copy a file from one foreign volume to another foreign volume
- Convert the format of the file during the transfer
- Copy groups of files from volume to volume
- Give the output file a different name from the input file

Format

COPY *input-file-spec[, . . .] output-file-spec*

Parameters

input-file-spec[, . . .]

Specifies the names of one or more input files to be copied. If you specify more than one input file, separate them with commas or plus signs. The syntax for input file names depends on the volume format option. Refer to Section 4 for a description of volume format options. You can specify standard VMS wildcards in both Files-11 and foreign file names. COPY supports wildcard directories for Files-11 and DOS-11 input.

output-file-spec

Specifies the name of the output file, directory, or device to which the input files are to be copied. If the input is a single file, you can specify an explicit output name (which is equivalent to a rename on a copy operation). If the input is more than one file, the output specifier must be one of the following:

- Wildcards (*, *.* or *.*;*) specifying current default device and directory
- An explicit device and/or directory for Files-11 output, such as BB:[EXCHANGE.TMP], with or without wildcards for the file name

- An explicit device for RT-11 as in DLA2:/VOLUME=RT11
- An explicit device or directory for DOS-11 output, such as TAPE:/VOLUME=DOS11 or TAPE:[11,132]/VOLUME=DOS11

The output file names are constructed according to rules implied by the input and output volume qualifiers. COPY does not concatenate multiple input files into a single output file. Wildcard directories are not permitted. The syntax for input file names depends on the volume format option. Refer to Section 4 for a description of volume format options.

You must specify at least one field in the output file specification; COPY replaces missing fields with the corresponding field of the related input file specification. If the input file has no corresponding field, COPY substitutes null text fields and maximizes version numbers.

The UIC of the output file is the UIC of the current process. For DOS-11 output in UIC format, EXCHANGE uses the current default directory; otherwise, it uses the current process UIC as a directory. You can specify an alternate directory for DOS-11 output in the command.

Qualifiers

/BOOT[=nn]

Copies bootstrap information from a monitor and the handler files to blocks 0 and 2 through 5 of an RT-11 volume, permitting you to use that volume as a system volume. The COPY/BOOT operation does not create any files on the volume; it is intended only to create bootable RT-11 systems.

The /BOOT qualifier implies /VOLUME_FORMAT=RT11 for both input and output specifications. The output device can be omitted, as it is assumed to be identical to the input device. You cannot combine the /BOOT qualifier with qualifiers other than /LOG. The COPY/BOOT command requires that both the input and output devices be the same volume or virtual device. The file name of the desired monitor must be specified as the input specification.

RT-11 Version 1.0 through Version 3.0 monitors had the system device handler linked into the monitor image. For Version 4.0 of RT-11, the system device handler uses the standard device handler, and the COPY/BOOT command must dynamically link the handler into the bootstrap area. COPY/BOOT finds the default handler for the specific device type and merges the handler with the monitor as it is copied to the boot area.

You can use the two-letter argument *nn* to override the default system device handler. The most frequent use of this option occurs when a diskette is mounted in an RX02 drive, and you want to create a diskette bootable from an RX01 drive. (The diskette must be single density.) The default handler for the RX02 is DY.SYS, and the handler for the RX01 is DX.SYS; therefore, you would use the command COPY/BOOT=DX to create the bootable RX01 system diskette. Do not specify /BOOT=*nn* for Version 3.0 RT-11 and earlier systems; instead, choose the monitor file DYMNxx.SYS or DXMNxx.SYS as the source file.

/LOG

/NOLOG

Controls whether the EXCHANGE command COPY displays the file specifications of each file copied. If you specify /LOG, the system displays the following data for each copy operation: the file specifications of the input and output files, and the

EXCHANGE COPY

number of blocks or the number of records copied (depending on whether the file is copied on a block-by-block or record-by-record basis). The default is /NOLOG.

File Qualifiers

/ALLOCATION=n

Forces the initial allocation of the output file to the number of 512-byte blocks that you specified as n. The /ALLOCATION qualifier is valid only for Files-11 and RT-11 output files.

By default, COPY determines the initial allocation of the output file by the size of the input file. Typically, /ALLOCATION is needed only when you are creating a contiguous file on Files-11 (using /BEST_TRY_CONTIGUOUS or /CONTIGUOUS), when the input file is on magnetic tape, or when you want additional space at the end of the file.

If you specify /ALLOCATION, the file's allocated size does not change, unless you also specify /TRUNCATE. When you are unsure of the output size, you might want to specify both /ALLOCATION and /TRUNCATE.

/BEST_TRY_CONTIGUOUS

/NOBEST_TRY_CONTIGUOUS

Indicates whether the Files-11 output file is to be allocated contiguously on a "best effort" basis; that is, whether EXCHANGE will attempt to place the file on consecutive physical disk blocks. If insufficient contiguous space is available, the file occupies the largest available contiguous space plus additional extents as necessary for the rest of the allocation. You can apply this qualifier only to a Files-11 output file.

The /BEST_TRY_CONTIGUOUS qualifier has no effect when you copy files to magnetic tape volumes. When you would like a file from a magnetic tape to be copied contiguously, use both the /ALLOCATION and the /BEST_TRY_CONTIGUOUS qualifiers, because the size of the file on magnetic tape cannot be determined until after it is copied to the disk. If you do not know the exact size of the file, overestimate the size and specify /TRUNCATE (along with /ALLOCATION and /BEST_TRY_CONTIGUOUS) to avoid wasted space.

The default is /NOBEST_TRY_CONTIGUOUS.

/CARRIAGE_CONTROL=option

Defines the carriage control attributes of a file, as well as other attributes of the records. The carriage control options are: CARRIAGE_RETURN, which implies carriage return/line-feed control; FORTRAN, which indicates that the first character of each record is to be interpreted as the carriage control specifier; and NONE, which indicates that carriage control is not implied. Refer to Section 5.3 for a detailed description of /CARRIAGE_CONTROL options.

The default is /CARRIAGE_CONTROL=CARRIAGE_RETURN.

/CONTIGUOUS

/NOCONTIGUOUS

Indicates whether the copied file is to be contiguous; that is, stored on consecutive physical blocks on an output disk volume. The /CONTIGUOUS qualifier is valid only for Files-11 output files.

The **/CONTIGUOUS** qualifier has no effect when you copy files to magnetic tape volumes. When you would like a file from a magnetic tape to be copied contiguously, use both the **/ALLOCATION** and **/CONTIGUOUS** qualifiers because the size of the file on magnetic tape cannot be determined until after it is copied to the disk. If you do not know the exact size of the file, overestimate the size and specify the **/TRUNCATE** qualifier (along with **/ALLOCATION** and **/CONTIGUOUS**) to avoid wasted space.

The default is **/NOCONTIGUOUS**.

/DELETE

/NODELETE

Controls whether COPY deletes existing files of the same name during the copy operation. This qualifier is valid for RT-11 output only; it is equivalent to the RT-11 COPY command qualifier **/REPLACE**. In fact, you can use the EXCHANGE COPY command qualifier **/REPLACE** to control file deletion, although its function differs from that of **/DELETE** (see the description of the **/REPLACE** qualifier for details on its function).

If you want a message displayed when you delete a file, include the **/LOG** qualifier in your command. To prevent automatic file deletion, use **/NODELETE**.

The default is **/DELETE**. Files with the same name as the output file name are deleted *after* the new file has been copied.

/EXTENSION=n

Specifies the number of blocks to be added to the output file each time the file is extended. This qualifier is valid for Files-11 output files only.

EXCHANGE determines the default extension according to the following hierarchy:

1. An explicit value specified on the **/EXTENSION** qualifier
2. The current process default extension value set by the command **SET RMS_DEFAULT**
3. The current system default extension value set at system generation or with the **SET RMS_DEFAULT/SYSTEM** command

Use the **/EXTENSION** qualifier to set an extension quantity with magnetic tape input; EXCHANGE preallocates a file of the correct size when the input is on a directory-structured-device.

/PROTECT

/NOPROTECT

Determines whether protection is set for an RT-11 output file. The owner UIC of the output file is the UIC of the current process. This qualifier is not valid for Files-11 or DOS-11 output files. Protection attributes for Files-11 output are taken from the current process default protection.

EXCHANGE does not attempt to transfer protection attributes from the input file to the output file, because protection mechanisms of various operating systems do not readily translate to one another.

The default is **/NOPROTECT**.

/RECORD_FORMAT=(option[, . . .])

Defines the internal record structure of a file, as well as other attributes of the records.

EXCHANGE COPY

Refer to Section 5.1 for a description of the /RECORD_FORMAT qualifier and options.

/REPLACE /NOREPLACE

Requests that if an RT-11 output file already exists with the same file specification as that entered for the output file, the existing file is to be deleted *before* the copy proceeds. COPY allocates new space for the output file. The /REPLACE qualifier is valid for RT-11 output only; it is equivalent to the RT-11 COPY command qualifier /PREDELETE.

By default, COPY creates the new file first and then, after the copy operation is done, deletes the previous file. However, when you use /REPLACE, COPY deletes the previous file *before* it copies the new file. This can be a problem if the input file has been corrupted because the previous version of the file will have been deleted. Therefore, you should use /REPLACE only when there is insufficient room for two copies of the file.

/REWIND /NOREWIND

Determines whether a DOS-11 input magnetic tape reel logically rewinds to the beginning-of-tape mark (BOT) before EXCHANGE searches for the file name specified in the input specifier. This qualifier is valid for DOS-11 magnetic tape only. The default is /NOREWIND.

Use the /REWIND qualifier when you want COPY to search for a file from the logical beginning of the magnetic tape, instead of from the current physical position of the tape.

/START_BLOCK=[n]

For RT-11 volumes, specifies the logical block number where the file is to be placed. This qualifier is especially useful with TU58 tape cassettes, because performance can be significantly enhanced by careful placement of files.

/SYSTEM /NOSYSTEM

Controls whether the COPY command copies files that have the file type SYS. Files with a file type of SYS are usually necessary for the operation of an RT-11 system. Only RT-11 volumes handle SYS files in this manner.

The default is /NOSYSTEM; the COPY command does not copy an RT-11 file with the type SYS, whether matched by a wildcard specification or explicitly named. EXCHANGE displays a message whenever it skips over a SYS file during a copy operation.

/TRANSFER_MODE=option

Specifies the I/O method to be used in a transfer. This qualifier is useful for all volume formats.

Option	Function
AUTO	Select BLOCK transfer for efficiency if possible
BLOCK	Transfer block by block without looking at records
RECORD	Transfer record by record

The default is the AUTOMATIC transfer mode. In AUTOMATIC mode, EXCHANGE attempts to use a BLOCK transfer whenever possible. BLOCK transfers are possible between RT-11 volumes or between RT-11 and DOS-11 volumes, since the internal file structures are identical. AUTOMATIC does not use the BLOCK transfer if either file specification contains a /RECORD_FORMAT qualifier.

A BLOCK transfer moves data between devices. Since no interpretation is done on the data, BLOCK transfers are more efficient than RECORD transfers. The block sizes on both devices must be identical. Both input and output must be in BLOCK format. Specifying BLOCK on one parameter implies BLOCK for the other file or device specification.

A BLOCK transfer produces an exact copy of the file. If the output device is Files-11, the file will be a sequential file with fixed-length 512-byte records. This feature is used primarily to avoid any interpretation of the data during the transfer. If the Files-11 file is a sequential file with 512-byte fixed-length records, there is no difference between a /TRANSFER_MODE=BLOCK transfer and a /RECORD=FIXED=512 transfer.

A RECORD transfer moves the data record by record. A RECORD transfer requires more time than a BLOCK transfer, but it must be used if the input and output record structures differ.

When the /LOG qualifier is used in a COPY command, EXCHANGE displays the size of the file that was transferred. If BLOCK mode was used, the message gives the file size as the number of blocks transferred. If RECORD mode was used, the message displays the number of records.

/TRUNCATE

/NOTRUNCATE

Controls whether COPY truncates an output file at the end-of-file when copying it. The default is /NOTRUNCATE; COPY uses the allocation of the input file to determine the size of the output file.

/VOLUME_FORMAT=option

Defines the physical format of the volume to be processed. The default format qualifier is dependent on the device type.

If used, volume format qualifiers must be attached to one or both of the file specification parameters; you cannot attach them directly to the command. A volume format qualifier determines the format of the file name and directory specifications, and often implies certain defaults. Refer to Section 4 for a description of the volume format options and defaults.

Description

COPY transfers a file or files from an input volume to an output volume.

You can create multiple output files by specifying multiple input files. When multiple output files are created, the corresponding field from each input file is used in the output file name.

If you do not specify a version number for Files-11 output, COPY applies a version number as follows:

- The same version number as that of the input file, if the input volume structure supports version numbers and no file exists with the same name and type

EXCHANGE COPY

- A version number that is one greater than the highest version number of an existing file with the same file name and file type
- Version 1, if neither of the above applies

If you use an asterisk (*) wildcard character to specify the output file version number, COPY uses the version numbers of the associated input files (if any) as the version numbers of the output files.

Note that ANSI-formatted magnetic tapes do not handle version numbers in the same manner as disks. For a description of version numbers on magnetic tape, refer to the *OpenVMS System Manager's Manual*.

EXCHANGE might reformat files during the copy operation. The defaults for reformatting are dependent on the record and volume format qualifiers that are attached to both the input and output file specifications, as well as the type fields of the file specifications. Refer to Section 5 for a description of the /RECORD_FORMAT qualifier and record format defaults. Refer to Section 4.4 for a description of volume format defaults.

The COPY command does not copy a file with the SYS type unless you specify the /SYSTEM qualifier. EXCHANGE displays a message if it passes over one or more SYS files during a copy operation.

EXCHANGE does not copy files with the type BAD if the file specification contains wildcards. EXCHANGE does not display a message when it passes over one or more BAD files during a copy operation. Therefore, to copy a file with the type BAD, specify the file name explicitly instead of using wildcards.

Examples

1. EXCHANGE> COPY TEST.DAT DYA0:NEWTST.DAT/VOLUME=RT11

The command in this example copies the contents of the file TEST.DAT from the default disk and directory into a file named NEWTST.DAT on an RT-11 diskette (mounted on DYA0). If a file named NEWTST.DAT already exists, the COPY command replaces it. The record formats are variable length on the Files-11 input and ASCII stream on the RT-11 output.

2. EXCHANGE> COPY/LOG TEST.DAT DYA0:NEWTST.DAT
%EXCHANGE-S-DELETEPREV, previous copy of DYA0:NEWTST.DAT deleted
%EXCHANGE-S-COPIED, WRKD\$:[FRED]TEST.DAT;5
copied to DYA0:NEWTST.DAT, 93 records

The command in this example is the same as in the preceding example, except that the /LOG qualifier is included so that the actions of the command are displayed. The /VOLUME_FORMAT qualifier is omitted; EXCHANGE defaults to RT-11 format for the foreign mounted diskette. Since a file named NEWTST.DAT already exists on the diskette (from the command in the previous example), the first copy of the file is deleted after the second copy is successfully transferred.

3. EXCHANGE> COPY/LOG LARGE.DAT DYA0:/VOLUME=RT11
%EXCHANGE-S-DELETEPREV, previous copy of _DYA0:LARGE.DAT deleted
%EXCHANGE-W-ROUTEOF, end-of-file on output _DYA0:LARGE.DAT,
insufficient space on volume
%EXCHANGE-I-PARTCOPIED, WRKD\$:[FRED]LARGE.DAT;9 partially copied to
_DYA0:LARGE.DAT, 1670 records

```
EXCHANGE> COPY/LOG/REPLACE LARGE.DAT DYA0:/VOLUME=RT11  
%EXCHANGE-S-DELETEPREV, previous copy of _DYA0:LARGE.DAT deleted  
%EXCHANGE-S-COPIED, WRKD$:[FRED]LARGE.DAT;9 copied to  
_DYA0:LARGE.DAT, 3288 records
```

The first command in this example fails because there is insufficient space on DYA0 for EXCHANGE to do a normal copy (that is, to copy the file into a temporary file on DYA0, delete the existing file of the same name, and then rename the temporary file).

The second command in this example includes the /REPLACE qualifier, which directs COPY to delete an existing version of the output file before copying the new file. The first message generated by this command indicates that EXCHANGE has deleted an existing file. The second message indicates that the copy operation has successfully completed.

4. EXCHANGE> COPY MTA0:[11,132]*.COM/VOLUME=DOS11 [FRED.TEMP]

The command in this example copies all files with the file type COM owned by UIC [11,132] to the subdirectory [FRED.TEMP]. The default DOS-11 record format is STREAM. The default Files-11 record format is VARIABLE.

5. EXCHANGE> COPY/BOOT DYA0:RT11SJ.SYS DYA0:

The COPY/BOOT command in this example makes the diskette mounted on the RX02 drive DYA0 a bootable RT-11 system. Bootstrap information is written to the volume using the RT-11 single job monitor RT11SJ.SYS and the system device handler DY.SYS. The diskette can be formatted in single or double density.

6. EXCHANGE> COPY/BOOT=DX DYA0:RT11SJ.SYS DYA0:

As in the previous example, the COPY/BOOT command in this example makes the diskette mounted on the RX02 drive DYA0 a bootable RT-11 system. In this example, however, the system device handler is DX.SYS, the RX01 diskette handler. The diskette must be formatted in single density in order to boot on the RT-11 system.

7. EXCHANGE> COPY/BOOT CSA1:CONSOL.SYS

The command in this example writes bootstrap information on the console storage device on a VAX processor.

8. EXCHANGE> COPY DMA0:FROG.DAT/VOLUME=RT11/RECORD=STREAM -
_EXCHANGE> FROG4JUN.DAT/RECORD=(FIXED=80,PAD=" ")

The command in this example copies an ASCII stream file (the default) from an RT-11 volume to the current default device and directory. The output contains fixed-length records that are padded to 80 bytes with the space character.

EXCHANGE DELETE

DELETE

Deletes one or more files from a foreign block-addressable mass storage volume. EXCHANGE does not delete files from Files-11 volumes; the DELETE command is supported only on RT-11 volumes.

Format

DELETE file-spec[, . . .]

Parameter

file-spec[, . . .]

Specifies the names of one or more files to be deleted. You can specify wildcard characters in any of the file specification fields.

To delete more than one file, separate the file specifications with commas or plus signs.

The DELETE command does not delete a file with the SYS type unless you specify the /SYSTEM qualifier. EXCHANGE displays a message if it passes over one or more SYS files during a delete operation.

EXCHANGE does not delete files with the type BAD if the file specification contains wildcards. When this happens, you will not receive a warning. Therefore, to delete files with the type BAD, enter their file specifications explicitly.

Qualifiers

/LOG

/NOLOG

Controls whether the DELETE command displays the file specification of each deleted file. The default is /NOLOG.

/SYSTEM

/NOSYSTEM

Controls whether the DELETE command deletes files with the file type SYS. Files with the type SYS are usually necessary for the operation of an RT-11 system. Only RT-11 volumes handle .SYS files in this manner.

The default is /NOSYSTEM; the DELETE command does not delete an RT-11 file with the SYS type, whether matched by a wildcard specification or explicitly named. EXCHANGE displays a message whenever it skips a SYS file during a delete operation.

/VOLUME_FORMAT=option

Defines the physical format of the volume to be processed. RT-11 volumes are the only volumes on which DELETE is currently supported. Refer to Section 4 for a description of the volume format options and defaults.

Examples

1. EXCHANGE> DELETE DMA0:COMMON.SUM/VOLUME=RT11

The command in this example deletes the file COMMON.SUM from the RT-11 device DMA0.

EXCHANGE DELETE

2. EXCHANGE> DELETE DXA0:*.OLD

The command in this example deletes all files with the file type OLD from the diskette.

3. EXCHANGE> MOUNT /VIRTUAL TEST: TEST.DSK/VOLUME=RT11

EXCHANGE> DELETE TEST:ALPHA.TXT,BETA.TXT

The command in this example deletes the files ALPHA.TXT and BETA.TXT from the virtual device file TEST.DSK.

EXCHANGE DIRECTORY

DIRECTORY

Provides a list of files or information about a file or group of files. The files must reside on a foreign volume; EXCHANGE does not list directories of Files-11 volumes.

Format

DIRECTORY [file-spec[, . . .]]

Parameters

file-spec[, . . .]

Specifies one or more files to be listed. The **/VOLUME_FORMAT** qualifier determines the syntax of a file specification.

To specify more than one file, separate the file specifications with either commas or plus signs. You can use wildcard characters in the directory specification, file name, file type, or version number fields of a file specification.

Qualifiers

/ALL

/NOALL

Lists all deleted or unused files on an RT-11 volume, in addition to other files selected by the command. For example, the following command lists all MACRO source files, in addition to deleted and unused files:

```
EXCHANGE> DIRECTORY DMA0:*.MAC/ALL
```

/BADBLOCKS

/NOBADBLOCKS

Scans the volume to find any blocks that return read errors. The data on the volume is not modified. If a bad block replacement table is present, the contents of the table are displayed. This is valid for RT-11 volumes only.

/BLOCKS

/NOBLOCKS

Lists the starting block number of the file. This qualifier is valid only for directories of RT-11 devices. The first block of the device is block number 0. The default is **/NOBLOCKS**.

/BRIEF

/NOBRIEF

Includes only the file name of each file to be listed. Specifying the **/BRIEF** qualifier is equivalent to specifying **/NODATE/NOSIZE**. The default is **/BRIEF**.

/COLUMNS=n

Lists the files, using the specified number of columns on each line of the display. This qualifier is used in conjunction with the **/BRIEF** qualifier (either explicitly or by default). The default number of columns is dependent on the volume format and the information requested. The DIRECTORY command attempts to use as many columns as possible. If you request too many columns, DIRECTORY displays a message and reduces the number of columns to the number that fit on the listing.

/DATE

/NODATE

Includes the date for each file listed. If you omit this qualifier, the default is /DATE.

/DELETED

/NODELETED

Lists a directory of files that have been deleted from an RT-11 device, but whose file name information has not been destroyed. The listing includes the file names, types, sizes, creation dates, and starting block numbers (in decimal, unless you also specify the /OCTAL qualifier) of the deleted files. The /DELETED qualifier is valid only with block-addressable volumes in RT-11 format. The default is /NODELETED.

/FREE

/NOFREE

Includes unused areas in the directory listing. The /FREE qualifier is valid only with RT-11 formatted volumes.

/FULL

Lists all the available information for each file. The format of the listing depends on the format of the volume. The /FULL qualifier overrides the default brief listing format.

/OCTAL

/NOOCTAL

Controls whether numeric information is displayed in decimal or octal format. The default is /NOOCTAL; numbers are displayed in decimal radix. Dates are always displayed in decimal format.

/OUTPUT[=file-spec]

Writes the DIRECTORY output to a specified file, rather than to the current SYS\$OUTPUT device. If you specify the /OUTPUT qualifier without a file specification, the output is directed to SYS\$OUTPUT. If you omit the file type in the file specification, the default file type is LIS. If you specify a file type and omit the file name, the default file name is EXCHDIRE. No wildcard characters are allowed in the file specification.

/OWNER

Displays information about the owner of a volume and the files on the volume. For RT-11, the volume owner is shown. For DOS-11, the UIC of the file owner is shown.

/PRINTER

Queues the command output for printing under the name specified by the /OUTPUT qualifier. If you specify /PRINTER without the /OUTPUT qualifier, the output is directed to a file named EXCHDIRE.LIS, which is spooled for printing and then deleted.

/SIZE

/NOSIZE

Displays the file size in blocks for each file listed. The default is /SIZE.

EXCHANGE DIRECTORY

/SUMMARY

/NOSUMMARY

Lists a summary of the usage of the directory segments for an RT-11 volume. If a bad block replacement table is present, the contents of the table are displayed.

/VOLUME_FORMAT=option

Defines the physical format of the volume to be processed. The default format is dependent on the device type. Refer to Section 4 for a description of the volume format options and defaults.

The EXCHANGE command DIRECTORY is not valid for Files-11 devices.

Description

The output of the DIRECTORY command depends on the volume format and on certain formatting qualifiers and defaults. The following are the formatting qualifiers:

/ALL	/BLOCKS	/BRIEF
/COLUMNS	/DATE	/FULL
/OCTAL	/OWNER	/SIZE

The files that are listed always appear in the order in which they appear in the volume directory or the order in which they reside on a magnetic tape.

Examples

1. EXCHANGE> DIRECTORY DLA2:.OBJ/VOLUME=RT11/FULL

The command in this example lists all files with the type OBJ on the RT-11 volume mounted on DLA2. The /FULL qualifier causes the file sizes and dates to be listed along with the names.

2. EXCHANGE> DIRECTORY MFA0:/VOLUME=DOS11

The command in this example lists all files on the DOS-11 magnetic tape mounted on MFA0. The magnetic tape is rewound before the files are listed.

DISMOUNT

Releases a volume previously accessed by the EXCHANGE command MOUNT.

Format

DISMOUNT device-name[:]

Parameters

device-name[:]

Specifies the name of the device to be dismounted. You can specify a physical device name or a logical name assigned to a physical device name. If you omit a controller designation or a unit number, the defaults are controller A and unit 0, respectively. You can also specify the name of a virtual device.

Qualifiers

/MESSAGE

/NOMESSAGE

Controls whether or not EXCHANGE displays a message that the volume was dismounted. The default is determined by the /MESSAGE qualifier on the EXCHANGE command when EXCHANGE was activated.

Description

The DISMOUNT command closes all connections that EXCHANGE maintains to the device. This command does not affect the state of the operating system mount; the device remains accessible to VMS. If you do not use the DISMOUNT command, an implicit DISMOUNT is automatically executed when you exit EXCHANGE.

The DISMOUNT command is valid only with foreign devices.

Example

```
EXCHANGE> MOUNT/FOREIGN MTA0:  
EXCHANGE> COPY MTA0:AVERAGE.FOR/VOLUME=DOS11 *  
EXCHANGE> DISMOUNT MTA0:
```

The first command in this example mounts the tape on the device MTA0. The second command in this example transfers a file from the magnetic tape to the current default directory. The last command releases EXCHANGE's access to the volume; however, the volume is still mounted on the operating system and is accessible to VMS.

EXCHANGE EXIT

EXIT

Terminates execution of EXCHANGE. Control is returned to the DCL command level. You can also use CTRL/Z to exit EXCHANGE.

Format

EXIT

HELP

Displays information about EXCHANGE commands and qualifiers.

Format

HELP [command [qualifier [option [option]]]]

Parameters

command

Specifies the name of the EXCHANGE command that you want information about. If you omit the command, HELP displays general information listing all commands recognized by EXCHANGE.

qualifier

Gives the name of the qualifier to be explained.

option

Gives the name of the option to be explained.

Description

For an overview of EXCHANGE and a listing of the EXCHANGE command names, enter the HELP command with no arguments.

If you enter HELP and the name of an EXCHANGE command, HELP displays a description of the command followed by a list of related qualifiers. For information on any of the related qualifiers, enter the qualifier name at the prompt.

You can also obtain information on any EXCHANGE command qualifier by entering HELP, the command, and the qualifier at the EXCHANGE prompt, as follows:

EXCHANGE> HELP COPY/CONTIGUOUS

For information on a qualifier with options, enter HELP, the command, the qualifier, and the option at the EXCHANGE prompt.

If you specify an asterisk (*) in place of any keyword, the HELP command displays all information available at that level.

If you specify an ellipsis (. . .) after any keyword, the HELP command displays all information relating to that keyword.

You can specify percent signs and asterisks in the keyword as wildcard characters.

Example

EXCHANGE> HELP COPY/VOLUME...

The command in this example displays all the help that is available for the COPY qualifier /VOLUME_FORMAT, including descriptions of each of the options.

EXCHANGE INITIALIZE

INITIALIZE

Formats and writes a label on a foreign mass storage volume. For directory-structured devices, the device directory is also initialized.

Format

```
INITIALIZE device-name [volume-label]  
INITIALIZE/CREATE file-name [volume-label]
```

Parameters

device-name

Specifies the name of the device on which the volume to be initialized is physically mounted.

The device name can also refer to the name of a mounted virtual device to be reinitialized.

file-name

For INITIALIZE/CREATE, file-name refers to the name of a file to be created and initialized as a virtual device.

volume-label

Specifies the identification to be written onto the volume header for RT-11 volumes only. The volume label can contain up to a maximum of 12 alphanumeric characters. The default is *VMS Exchange*. Use quotation marks to specify a volume label with lowercase letters.

Qualifiers

/ALLOCATION=n

Specifies the allocation of a new virtual device file in terms of 512-byte blocks. The allocation specified is the number you entered as n. If you do not specify the /ALLOCATION qualifier when you create a new virtual device file, the default allocation is 494 blocks, the size of a single-density diskette. The maximum allocation is 65,536 blocks.

A virtual device file is usually the size of a standard device supported by both RT-11 and VMS. These sizes are as follows:

Device	Blocks
TU58	512
RX01	494
RX02	494 (single density)
RX50	800
RX02	988 (double density)
RX33	2400

Device	Blocks
RL02	20480
RK06	27126
RK07	53790

You can also use the /ALLOCATION qualifier to reduce the size of a physical device. For example, if you want to prepare an RL02 disk but have only an RK07 device available, you can initialize the RK07 to a volume of 20,480 blocks. When the RL02 is available, you can transfer the files to the RL02 knowing they will fit on the smaller device.

/BADBLOCKS[=RETAIN]

Performs a bad block scan of the volume before initialization. A file named FILE.BAD is created on top of each bad block or group of bad blocks encountered on the device, preventing any future use of the bad areas.

If a bad block is found in either the boot block or the volume directory, the volume is not usable and EXCHANGE displays an error message. If the bad block is in a directory segment other than the first, you might be able to use the volume by reinitializing it with a smaller number of segments (see the /SEGMENTS qualifier description).

If you specify /BADBLOCKS=RETAIN, EXCHANGE uses the device's existing bad block information, instead of performing a bad block scan. Therefore, initializing takes less time. If you do not specify RETAIN, EXCHANGE writes a pattern on each block of the volume, then reads each block to verify that the block is usable. EXCHANGE prints a list of the bad blocks found on the device.

RK06, RK07, and RL02 disk volumes support bad block replacement. Therefore, Digital recommends that you use the /REPLACE=RETAIN qualifier for these volumes. If you use the /BADBLOCKS qualifier with a volume initialized previously with the /REPLACE qualifier, EXCHANGE deletes the bad block replacement table and performs a new bad block scan. If you use /BADBLOCKS=RETAIN with such a volume, EXCHANGE uses the FILE.BAD files created during the volume initialization.

/CREATE

Specifies that a virtual device is to be created and initialized. The specification is a file name; if a file type is not given, EXCHANGE applies the default type of DSK. Refer to Section 6 for a description of virtual devices.

/DENSITY=density-value

Specifies, for magnetic tape volumes, the density in bytes per inch (bpi) at which the tape is to be written.

For magnetic tape volumes, the density value specified can be 800 or 1600, as long as the density is supported by the magnetic tape drive. If you do not specify a density value for a blank tape, the system uses a default of the lowest density supported by the tape drive.

For the RX02 dual-density diskette drive, use the DCL command INITIALIZE /DENSITY=SINGLE or INITIALIZE/DENSITY=DOUBLE to reformat the diskettes to a different density; then use the EXCHANGE command INITIALIZE to create the RT-11 directory structure.

EXCHANGE INITIALIZE

Note

Diskettes formatted in double density cannot be read or written by the console block storage device (an RX01 drive) of a VAX-11/780 until they have been reformatted in single density.

/EXTRA_WORDS=n

Specifies, for RT-11 volumes, the number of extra words to add to each directory entry, in addition to the required seven words. The ability to increase the length of directory entries is useful for some RT-11 applications. Increasing the size of the directory entries reduces the number of entries that fit in each directory segment.

/MESSAGE

/NOMESSAGE

Controls whether or not EXCHANGE displays a message that the volume was initialized. The default is determined by the /MESSAGE qualifier entered with the EXCHANGE command when EXCHANGE was activated.

/REPLACE=RETAIN

Retains, when an RT-11 volume is initialized, the bad block replacement table and any existing FILE.BAD files.

The RETAIN option is required; EXCHANGE cannot build a replacement table for a volume. The RT-11 system builds and uses the table based on specific hardware error conditions. The VMS I/O system is different, and cannot be relied upon to generate exactly the same error conditions. Therefore, it is not possible for EXCHANGE to generate the same replacement table that would be generated by RT-11.

If no replacement table is present, the qualifier /REPLACE=RETAIN is equivalent to /BADBLOCKS=RETAIN.

/SEGMENTS=n

Defines, for RT-11 volumes, the number of 2-block directory segments to allocate for the directory. The number of segments in the directory establishes the number of files that can be stored on a device. The system allows a maximum of 72 files per directory segment and 31 directory segments per device. The argument **n** represents the number of segments; the valid range for **n** is from 1 to 31 (decimal). The default values for **n** depend on the device type, as follows:

Device	Segments
TU58	1
RX01	1
RX02	1 (single density)
RX02	4 (double density)
RX50	4
RX33	16

Device	Segments
RL02	16
RK06	16
RK07	31

/VOLUME_FORMAT=option

Defines the physical format of the volume to be processed. Refer to Section 4 for a description of the volume format options and defaults.

The EXCHANGE command INITIALIZE is not valid for Files-11 devices.

Description

The EXCHANGE command INITIALIZE erases all files from a volume. After initialization, the volume directory contains no files. DOS-11 magnetic tapes and RT-11 block-addressable devices can be initialized.

The device must be mounted with the /FOREIGN qualifier.

Examples

1. \$ MOUNT/FOREIGN DLA2:
%MOUNT-I-MOUNTED, mounted on DLA2
\$ EXCHANGE
EXCHANGE> INITIALIZE DLA2:
%EXCHANGE-S-INITIALIZED, the RT-11 volume _DLA2: has been initialized

The command in this example initializes the volume mounted on the RL02 drive DLA2. Since DLA2 is a block-addressable device mounted with the /FOREIGN qualifier, RT-11 is the default format. EXCHANGE physically scans all blocks of the volume, builds a bad block replacement table, and displays a message indicating that it failed to turn up any bad blocks.

2. EXCHANGE> INITIALIZE MTA0:/DENSITY=1600

The command in this example initializes the DOS-11 magnetic tape volume loaded on MTA0. The density is specified as 1600 bpi; the default would have been 800 bpi for an MT drive.

3. EXCHANGE> INITIALIZE/CREATE/ALLOCATION=1000 VIRTUAL
%EXCHANGE-S-INITIALIZED, the RT-11 volume DRB0:[LOGIN]VIRTUAL.DSK has been initialized

The command in this example creates a virtual device with an allocation of 1000 blocks in the directory [LOGIN] on DRB0. EXCHANGE applies the default file type DSK.

EXCHANGE MOUNT

MOUNT

Makes a foreign volume and the files or data it contains available for processing by EXCHANGE. The EXCHANGE command MOUNT enters the device into internal tables maintained by EXCHANGE.

Format

MOUNT device-name

MOUNT/VIRTUAL device-name file-name

Parameters

device-name

Specifies the physical device name or logical name of the device on which the volume is to be mounted. For MOUNT/VIRTUAL, the device-name parameter supplies a name for the virtual device.

file-name

For MOUNT/VIRTUAL only, the file-name parameter gives the name of the file containing the image of the foreign volume.

Qualifiers

/DATA_CHECK[=(READ,WRITE)]

/NODATA_CHECK

Determines whether EXCHANGE performs a second operation after every I/O operation to verify that the data was correctly transferred. If you specify /DATA_CHECK=WRITE, after every write operation EXCHANGE rereads the data that was just written and compares it with the original data. If you specify /DATA_CHECK=READ, EXCHANGE reads each block of data twice and verifies that both read operations received identical data.

It is usually more efficient to use the /DATA_CHECK option on the DCL command MOUNT than to use the option on the EXCHANGE command MOUNT. If you mount a device with the DCL command MOUNT/FOREIGN/DATA_CHECK, VMS can use features in the device hardware and device driver to perform the redundant I/O operations.

The RX01 and RX02 diskette drives do not contain the necessary features for the operating system to perform data checking. If you use the DCL command MOUNT/DATA_CHECK with a diskette, the system is unable to perform data checking (no warning message is displayed). EXCHANGE is able to recognize, however, that a diskette was mounted with the data checking option; in this case, EXCHANGE performs the software data checking internally, even if you have not specified an explicit MOUNT/DATA_CHECK command.

If you specify the /DATA_CHECK qualifier without an option, the default is /DATA_CHECK=WRITE.

/FOREIGN

Indicates that the volume is not in the standard format used by the VMS operating system; that is, a magnetic tape volume is not in the standard ANSI format, or a disk volume is not in Files-11 format. The EXCHANGE command MOUNT mounts only foreign volumes. The /FOREIGN qualifier is the default. You must use the DCL command MOUNT to mount VMS volumes.

The default protection applied to foreign volumes is RWLP (Read, Write, Logical I/O, Physical I/O) for the system and owner. If you mount a volume currently in Files-11 format with the /FOREIGN qualifier, you must have the user privilege to override volume protection (VOLPRO), or your UIC must match the UIC on the volume.

/MESSAGE

/NOMESSAGE

Controls whether EXCHANGE displays a message indicating that the volume was mounted. The default is determined by the /MESSAGE qualifier specified with the EXCHANGE command when EXCHANGE was invoked.

/VIRTUAL

Mounts a Files-11 file as a virtual device. When you specify /VIRTUAL, the MOUNT command requires two parameters. The first parameter is a device name assigned as the name of the virtual device. The second parameter is the name of the Files-11 file that is the image of a foreign volume.

/VOLUME_FORMAT=option

Defines the physical format of the volume to be processed. Refer to Section 4 for a description of the volume format options and defaults.

/WRITE

/NOWRITE

Controls whether the volume can be written. You can specify /NOWRITE to protect files by providing read-only access. Specifying /NOWRITE is equivalent to write-locking the device.

The default is /WRITE. If /WRITE is specified (either explicitly or by default) and the volume itself is write-locked, EXCHANGE displays a message to inform you that the volume is write-locked.

Description

The EXCHANGE command MOUNT enters the description of the foreign volume in internal tables maintained by EXCHANGE. This command is different from the DCL command MOUNT, which enters the device in tables maintained by the VMS operating system.

A virtual volume must be explicitly mounted with the MOUNT/VIRTUAL command.

If an EXCHANGE command is given on an unmounted foreign volume, EXCHANGE attempts to execute an implied MOUNT/FOREIGN/WRITE-/NODATACHECK on the device. This feature enables EXCHANGE to operate in the single-command DCL mode.

If a MOUNT/FOREIGN (either implied or explicit) command is given for a foreign device that has not been mounted on the VMS system, EXCHANGE issues the equivalent of the DCL command MOUNT/FOREIGN and attempts to make the volume known to the operating system. Any volume mounted in this way remains mounted after EXCHANGE exits.

When EXCHANGE issues the MOUNT/FOREIGN command, the system checks the following:

- That the device has not been allocated to another user
- That a volume is physically loaded on the specified device

EXCHANGE MOUNT

- For magnetic tapes, the volume accessibility field of the VOL1 label

For more information about the Mount utility, see the *OpenVMS System Manager's Manual*.

Examples

1. EXCHANGE> MOUNT MT:
%EXCHANGE-I-MOUNTED, MATH06 mounted on _MTA0:

The command in this example requests that the magnetic tape loaded on the device MTA0 be mounted as a foreign volume. The tape label is displayed, since the tape has been previously initialized as an ANSI-labeled tape with the label MATH06. This tape cannot be accessed as a Files-11 tape; it should be reinitialized as a DOS-11 tape during the current EXCHANGE session.

2. EXCHANGE> MOUNT DMA1:
%EXCHANGE-I-WRITELOCK, volume is write-locked
%EXCHANGE-S-MOUNTED, volume DMA1: mounted

The command in this example mounts the foreign volume that is loaded in the RK07 device DMA1, making the volume available for subsequent EXCHANGE commands. EXCHANGE recognizes that the volume itself is write-locked, and displays a message.

EXCH-36

RENAME

Changes the file specification of an existing file on an RT-11 volume.

Format

RENAME input-file-spec output-file-spec

Parameters

input-file-spec

Specifies the names of one or more files whose specifications are to be changed.

You can use wildcard characters in the file name and file type specification; if you do, all files that satisfy the specified fields are renamed.

output-file-spec

Provides the new file specification to be applied to the input file. The RENAME command uses the file name and file type of the input file specification to provide defaults for nonspecified fields in the output file.

You can specify an asterisk (*) in place of the file name or file type of the output file; the RENAME command uses the corresponding field in the input file specification to name the output file. Specifying wildcard characters in corresponding fields of the input and output file specifications results in multiple rename operations.

You can omit the device name from the output specification. EXCHANGE uses the device name specified for the input, since it is not possible to rename a file from one device to another.

Qualifiers

/LOG

/NOLOG

Controls whether the RENAME command displays the file specification of each file that it renames. The default is /NOLOG.

/PROTECT

/NOPROTECT

Determines whether protection is set for an RT-11 output file. The default is /NOPROTECT.

This qualifier is not valid for Files-11 or DOS-11 output files. Protection attributes for Files-11 output are taken from the current process default protection.

EXCHANGE does not attempt to transfer protection attributes from the input file to the output file. Protection mechanisms of various operating systems do not readily translate to one another.

The owner UIC of the output file is the UIC of the current process.

/SYSTEM

/NOSYSTEM

Controls whether the RENAME command renames files that have the file type SYS. These files are usually files necessary for the operation of an RT-11 system. Only RT-11 volumes handle SYS files in this manner.

EXCHANGE RENAME

The default is /NOSYSTEM; the RENAME command does not rename an RT-11 file with the type SYS, whether it is matched by a wildcard specification or is named explicitly. EXCHANGE displays a message when it skips an SYS file during a rename operation.

EXCHANGE handles files with the file type BAD in a similar manner; that is, the rename operation skips BAD files. However, EXCHANGE does not warn that BAD files are being skipped, and the /SYSTEM qualifier has no effect on BAD files. To rename a file with the type BAD, specify the file explicitly instead of using wildcards.

/VOLUME_FORMAT=option

Defines the physical format of the volume to be processed. EXCHANGE supports the RENAME command on RT-11 volumes only. Refer to Section 4 for a description of volume format options and defaults.

Examples

1. EXCHANGE> RENAME DMA0:AVERAG.OBJ MEAN

The command in this example changes the file name of the file AVERAG.OBJ to MEAN.OBJ.

2. EXCHANGE> RENAME DLA2:*.TXT *.OLD

The command in this example renames all files with the file type TXT to files with the file type OLD; the file names are not changed.

3. EXCHANGE> RENAME/LOG DMA0:DATA.* NEW
%EXCHANGE-I-RENAME, _DMA0:DATA.AAA renamed to _DMA0:NEW.AAA
%EXCHANGE-I-RENAME, _DMA0:DATA.BBB renamed to _DMA0:NEW.BBB
%EXCHANGE-I-RENAME, _DMA0:DATA.CCC renamed to _DMA0:NEW.CCC

The command in this example illustrates wildcard characters in the input file names. The device DMA0 contains three files with the file name DATA; the result is the renaming of all three files as displayed by the /LOG qualifier.

SHOW

Displays the devices currently mounted by EXCHANGE.

Format

SHOW

Example

```
EXCHANGE> MOUNT DBA0:  
%EXCHANGE-I-VMSMOUNT, a "$ MOUNT /FOREIGN DBA0:" command was done  
by Exchange  
%EXCHANGE-S-MOUNTED, the RT-11 volume _DBA0: has been mounted  
EXCHANGE> MOUNT DLA2:  
%EXCHANGE-I-VMSMOUNT, a "$ MOUNT /FOREIGN DLA2:" command was done  
by Exchange  
%EXCHANGE-S-MOUNTED, the RT-11 volume _DLA2: has been mounted  
EXCHANGE> INITIALIZE/CREATE WRKD:[USER]VIRT.DSK  
%EXCHANGE-S-INITIALIZED, the RT-11 volume WRKD:[USER]VIRT.DSK;1  
has been initialized  
EXCHANGE> MOUNT/VIRTUAL DISK: VIRT.DSK  
%EXCHANGE-S-MOUNTVER, the RT-11 volume DISK: has been mounted  
using the file WRKD:[USER]VIRT.DSK;1  
EXCHANGE> SHOW  
  
Mounted volumes:  
    volume format:          RT-11  
    volume class:           disk (virtual volume)  
    virtual file name:     WRKD:[USER]VIRT.DSK;1  
    volume size:            494 blocks  
  
    _DLA2:  
    volume format:          RT-11  
    volume class:           disk  
    physical device name:  _DLA2:  
    volume size:            20480 blocks  
  
    _DBA0:  
    volume format:          RT-11  
    volume class:           disk  
    physical device name:  _DBA0:  
    volume size:            65535 blocks  
EXCHANGE>
```

The MOUNT commands in this example mount foreign devices on drives DBA0 and DLA2. The SHOW command displays all devices currently mounted by EXCHANGE.

EXCHANGE TYPE

TYPE

Displays the contents of a file or group of files on the current output device.

Format

TYPE file-spec[, . . .]

Parameters

file-spec[, . . .]

Specifies the names of one or more input files to be copied. If you specify more than one input file, separate them with either commas or plus signs. You can specify standard VMS wildcards in file names, both Files-11 and foreign. You can use wildcard directories with Files-11 and DOS-11 input.

The syntax for the file names is dependent on the particular volume format option present or implied. Refer to Section 4 for a description of the volume format options and defaults.

Qualifiers

/LOG

/NOLOG

Controls whether TYPE displays the file specifications of each file displayed.

If you specify /LOG, the TYPE command displays the following for each copy operation:

- File specifications of the input and output files
- Number of blocks or the number of records copied (depending on whether the file is copied on a block-by-block or record-by-record basis)

/RECORD_FORMAT=(option[, . . .])

Defines the internal record structure of a file and other attributes of the records. Section 5.1 describes record format options.

/REWIND

/NOREWIND

Controls whether the DOS-11 input magnetic tape reel logically rewinds to the beginning-of-tape mark before EXCHANGE searches for the file name given in the input specifier.

Use this qualifier only for DOS-11 magnetic tape devices. The default is /NOREWIND; you should use /REWIND when you want TYPE to start searching for a file at the beginning of the magnetic tape rather than at the current position.

/VOLUME_FORMAT=option

Defines the physical format of the volume to be processed. The default format qualifier is dependent on the device type. Refer to Section 4 for a description of the volume format options and defaults.

Example

```
EXCHANGE> TYPE DYAO:BEAM.RAT/VOLUME=RT11/RECORD=STREAM
```

The command in this example copies the RT-11 file to the current SYS\$OUTPUT device. The two qualifiers are the defaults if DYAO was mounted as a foreign volume.

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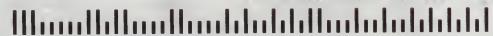
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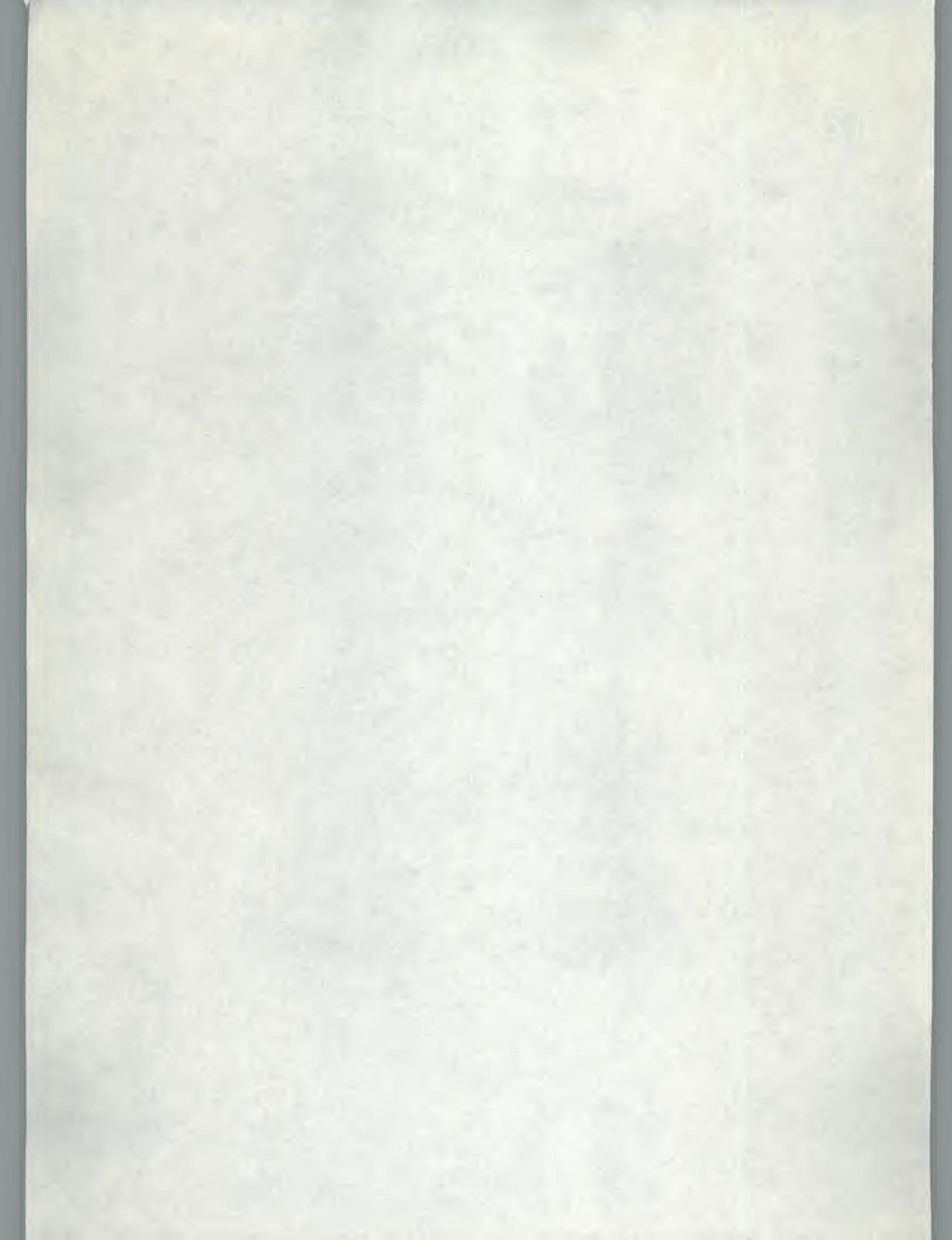
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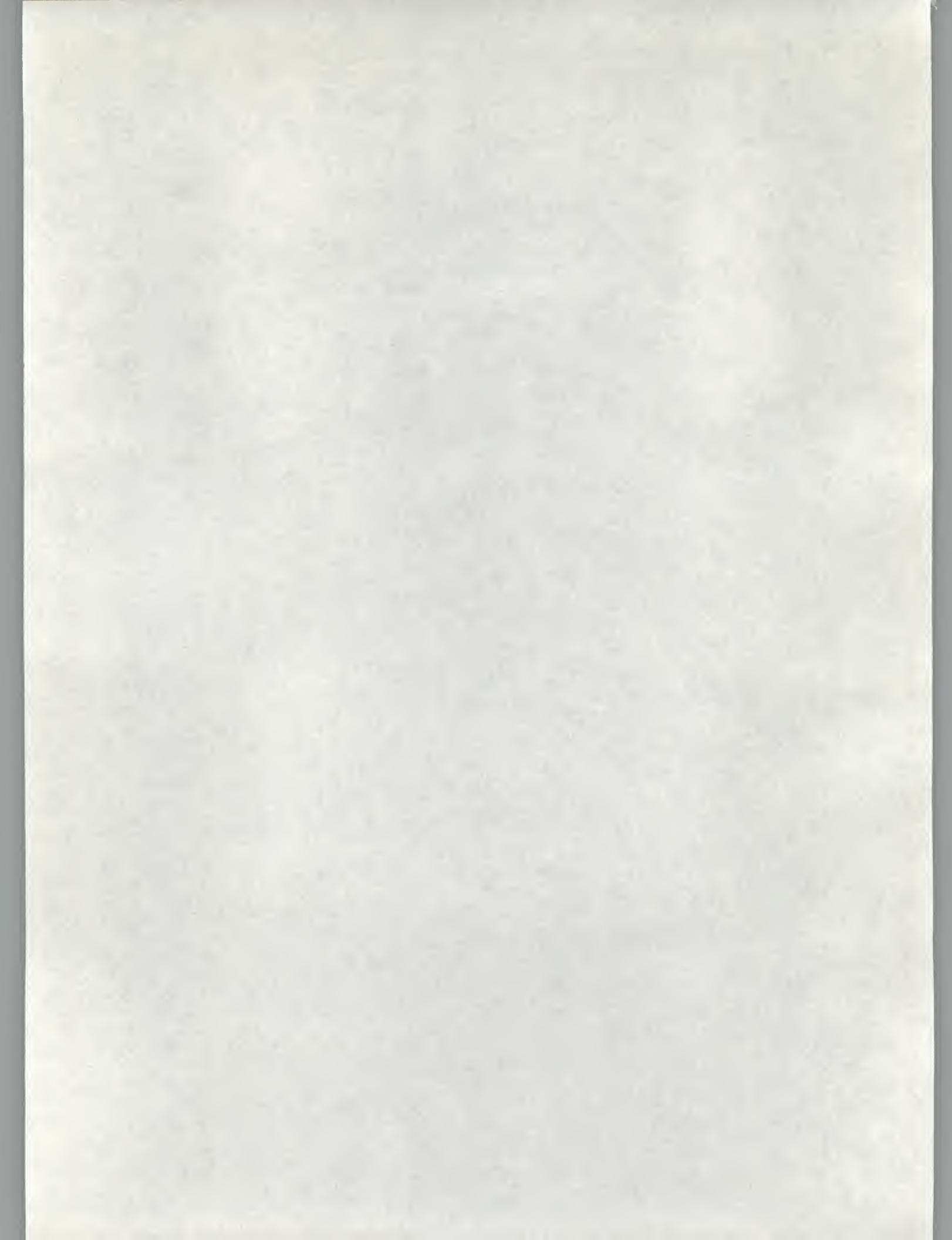
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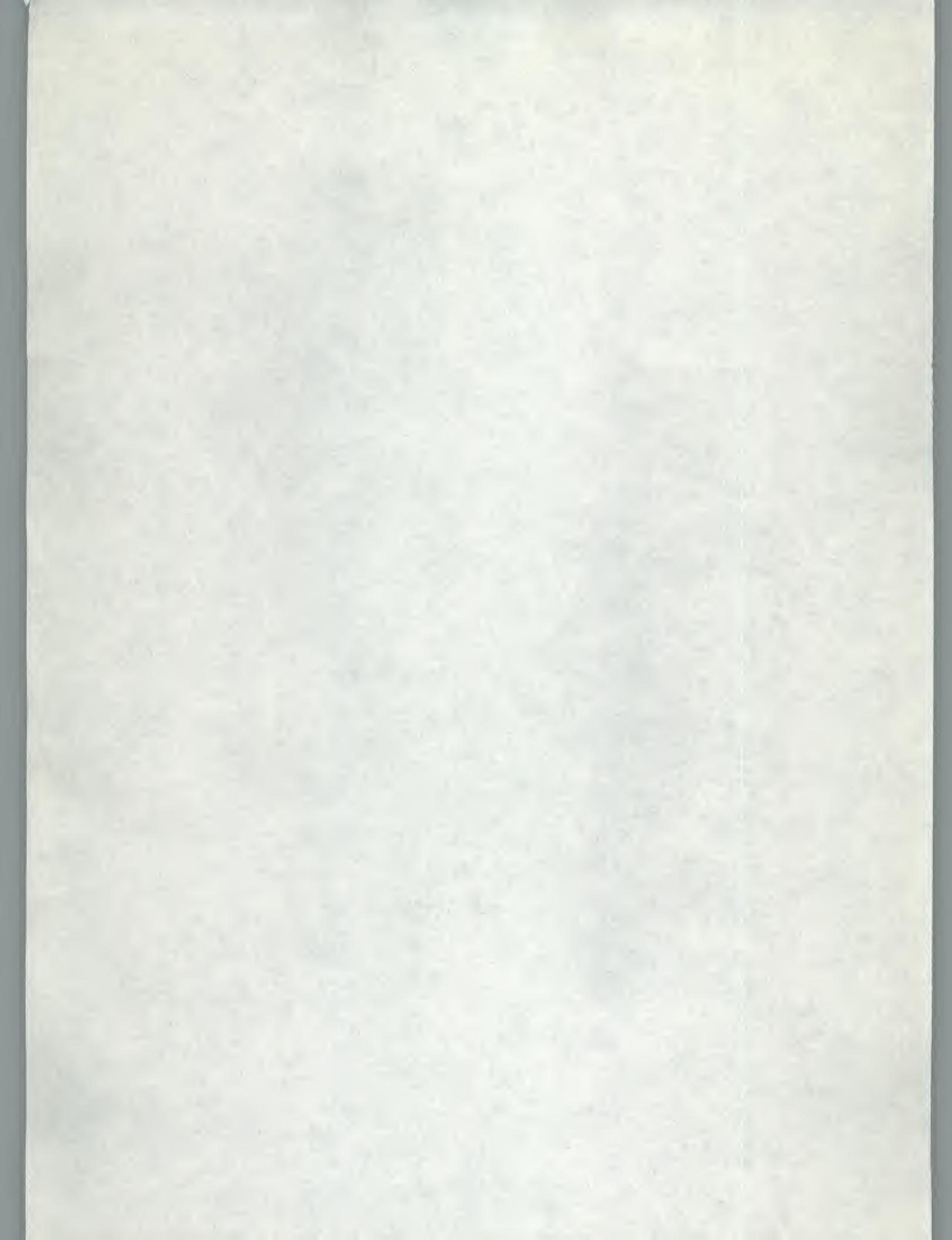
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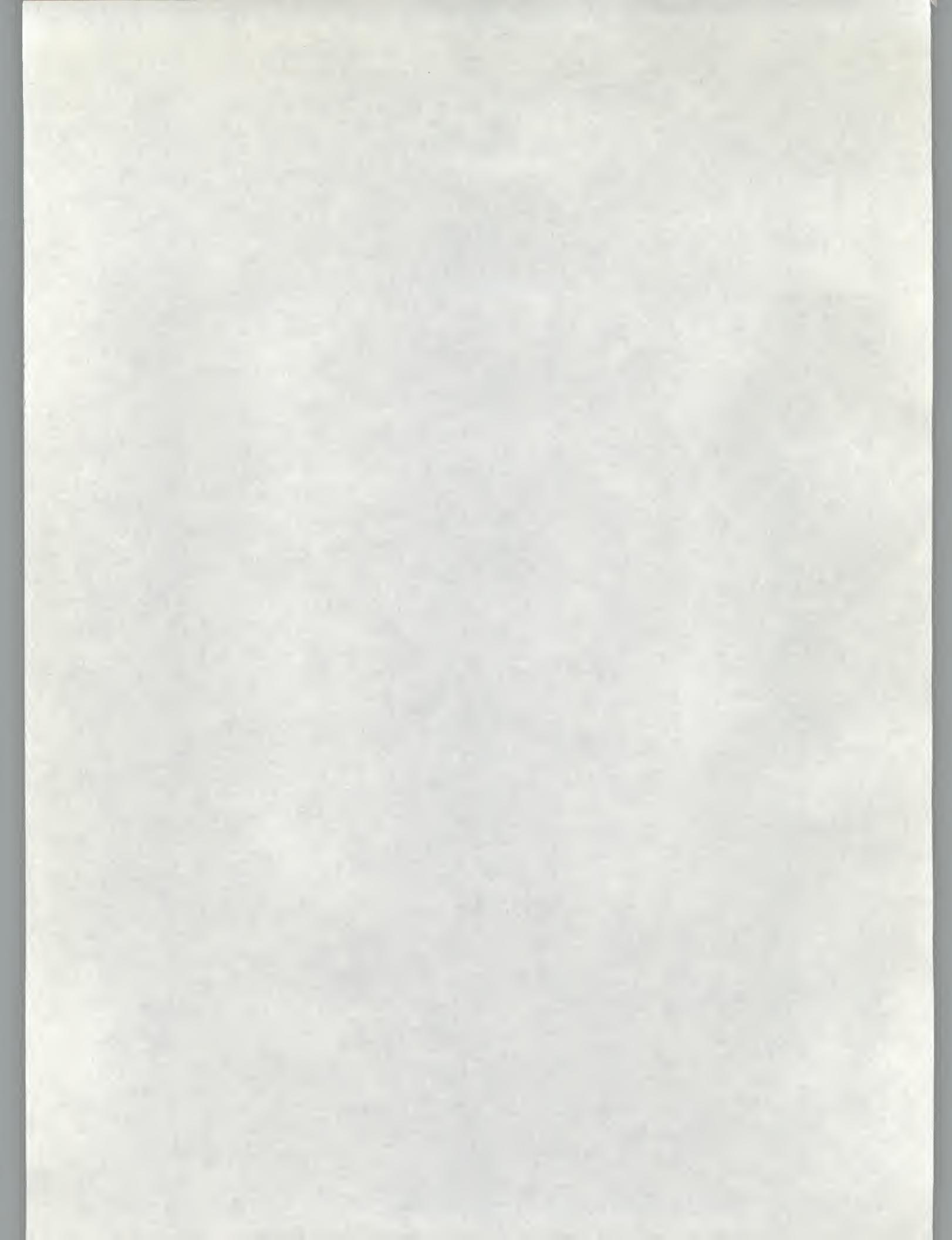


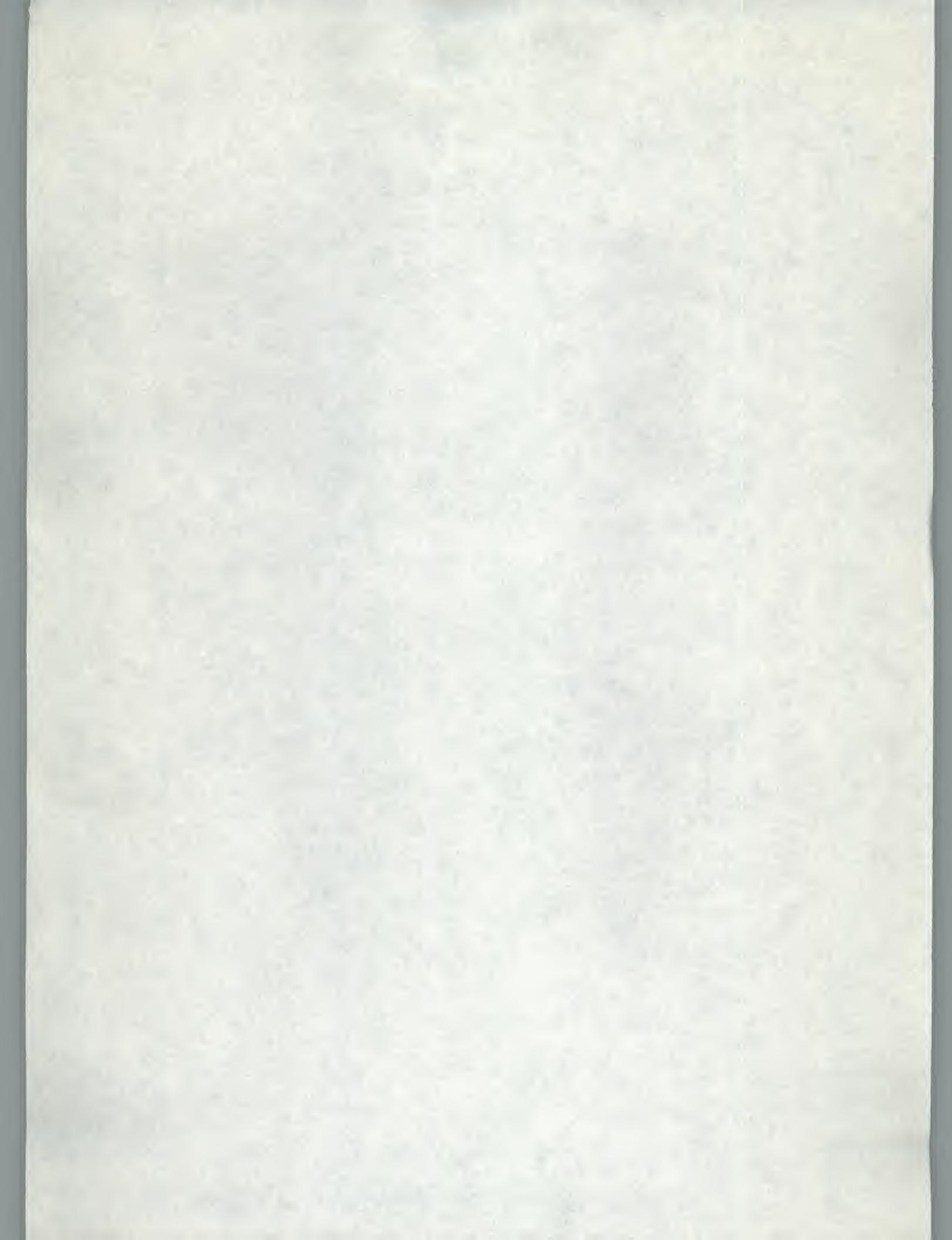
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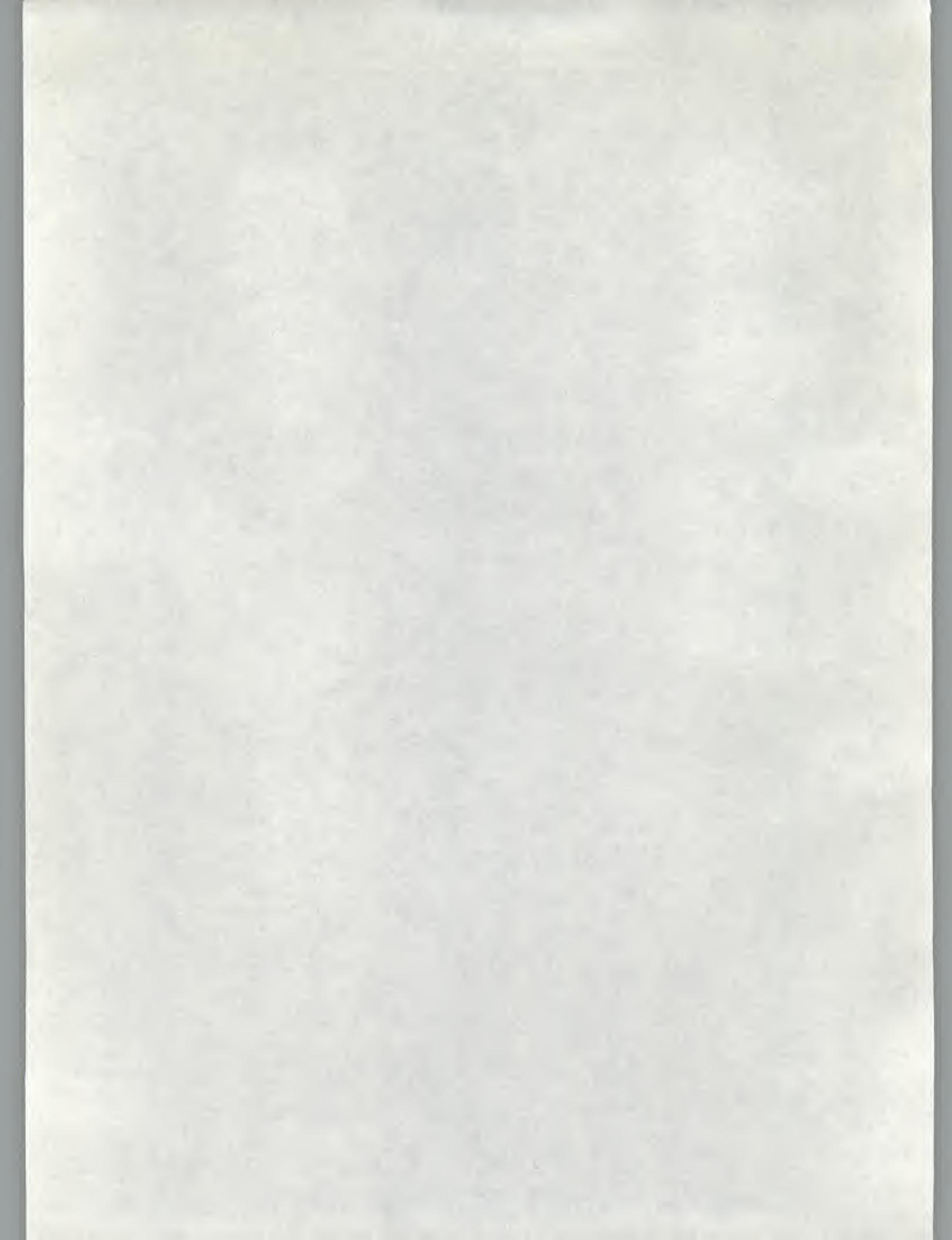


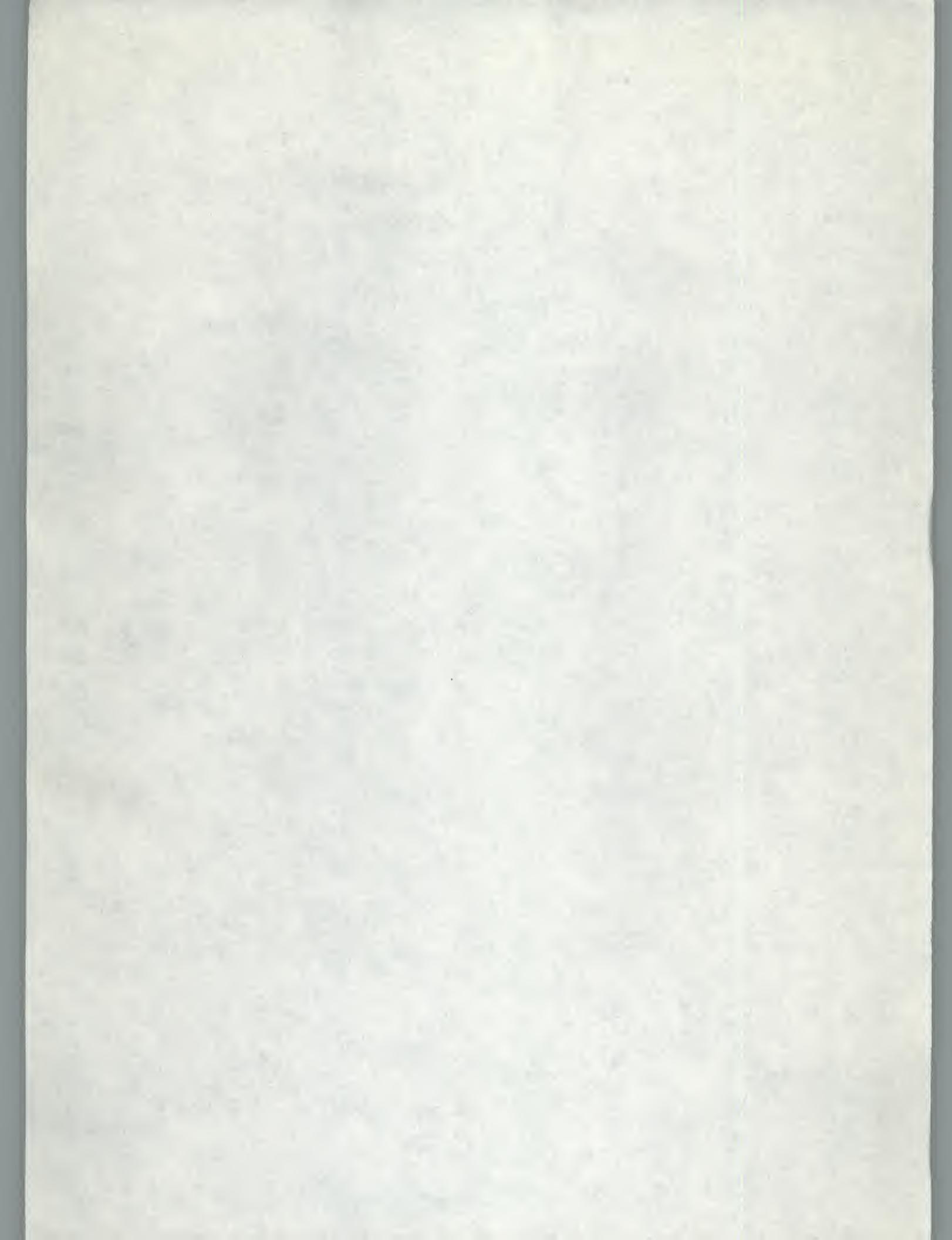


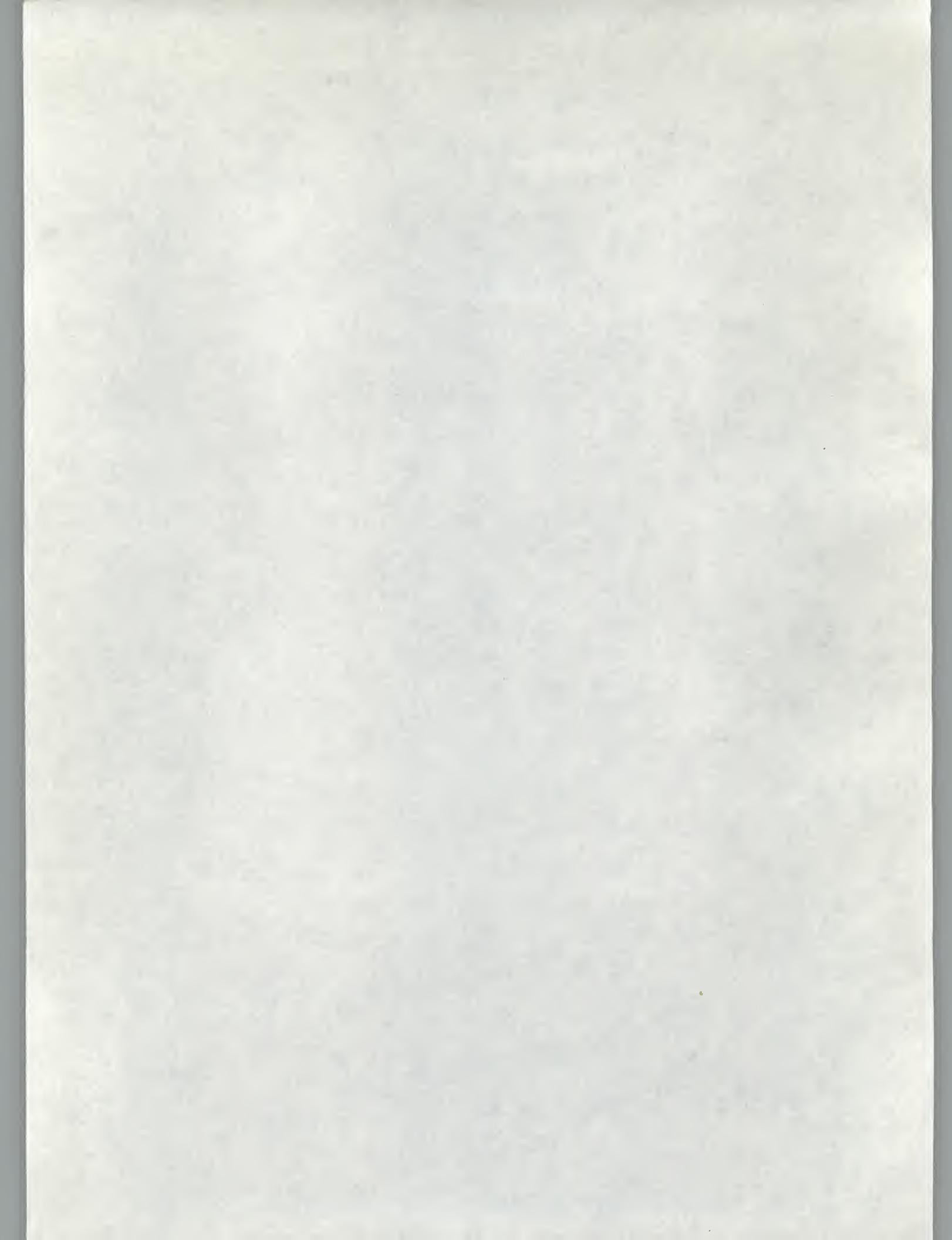


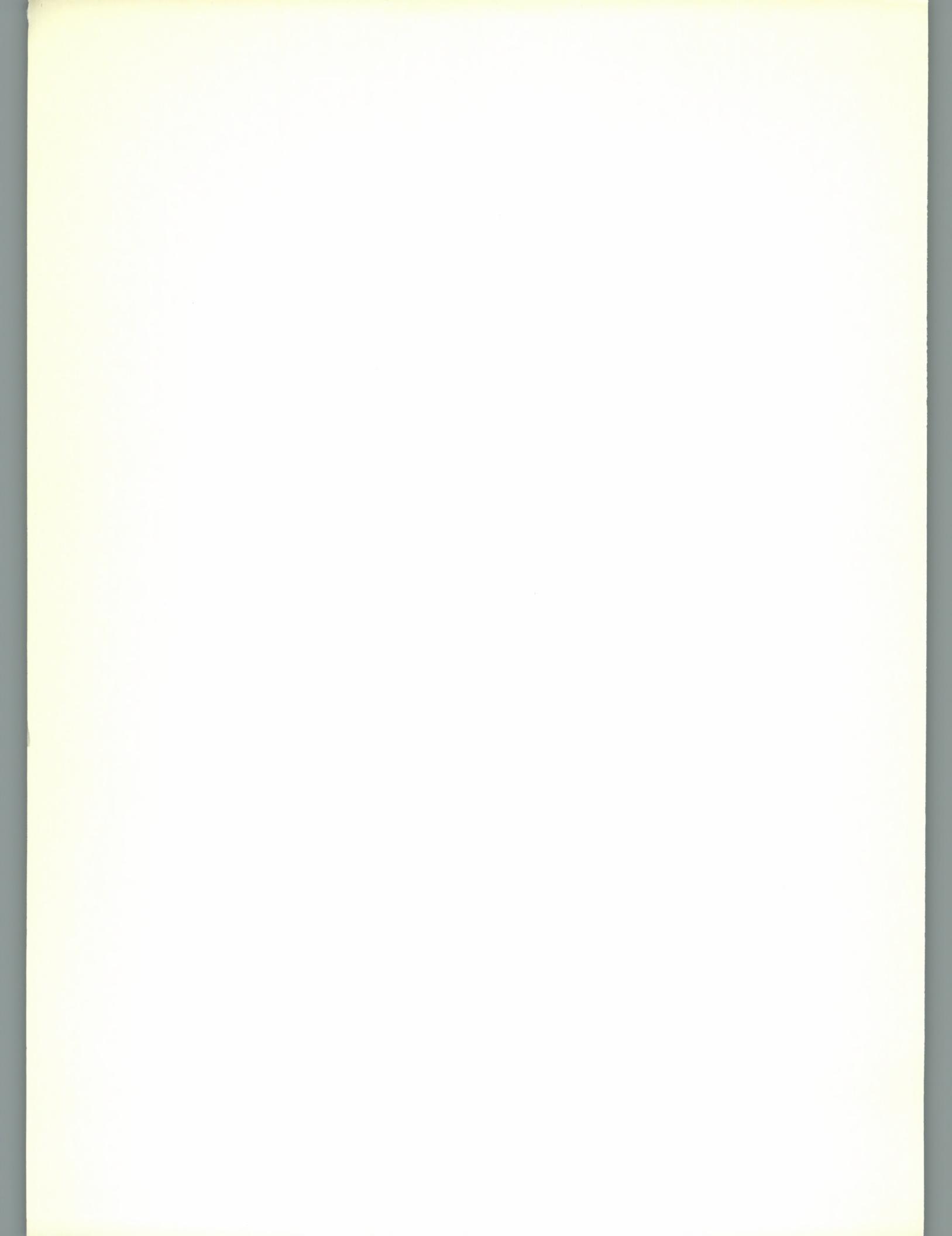












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